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Candidate surname					Other names				
Centre Number					Candidate Number				
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Pearson Edexcel International Advanced Level

Wednesday 10 May 2023

Afternoon (Time: 2 hours)

Paper reference **WIT11/01**

Information Technology

International Advanced Subsidiary/Advanced Level

UNIT 1

You do not need any other materials.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*

Information

- The total mark for this paper is 80.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*
- Calculators are **not** allowed.

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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Answer ALL questions. Write your answers in the spaces provided.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

1 A magazine is published on a website as well as on paper.

(a) The use of information technology systems has associated legal issues.

(i) State what is meant by the term **copyright**.

(1)

(ii) Complete the table to name the legal issue associated with **each** situation.

(3)

Situation	Legal issue
A member of staff uses the magazine editor's password to access the editor's emails	
The individual responses of readers from a 1983 survey are stored in a warehouse	
The new magazine logo is found online and copied by another organisation	

(b) Customers use a web browser to read the magazine and also to manage their accounts.

(i) State **one** reason why the use of encryption makes data more secure.

(1)



- (ii) The website uses a feature that allows readers who pay an additional fee to access video interviews.

Identify this feature of the website.

(1)

- ☐ **A** Firewall
- ☐ **B** Media access control
- ☐ **C** Pay per click
- ☐ **D** Paywall

- (c) Web pages use both client-side and server-side scripting.

- (i) State **two** tasks carried out by client-side scripting.

(2)

1

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2

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- (ii) State **two** tasks carried out by server-side scripting.

(2)

1

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2

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(d) One magazine article is presented as a video.

The video takes 7 minutes to download.

The mean network speed is 50.4 Mbits per second.

The formula to calculate the file size is:

$$\text{File size in bits} = \text{Transfer time in seconds} \times \text{speed in bits per second}$$

Construct an expression to show how big the video is in gibibytes.

You do **not** need to do the calculation.

(4)

(Total for Question 1 = 14 marks)



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QUESTION 2 BEGINS ON THE NEXT PAGE.



2 Organisations use a range of digital devices and IT systems.

(a) State **two** factors that can be used to assess the performance of digital devices.

(2)

1

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2

.....

(b) IT systems have four conceptual elements.

One of the conceptual elements is people.

Give **two other** conceptual elements of an IT system.

(2)

1

.....

2

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(c) Search and rescue teams use portable devices when searching for people lost in the mountains.

(i) Explain how a GPS device worn by a search dog helps rescuers to find a lost person.

(2)

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(ii) Drones are used by search and rescue teams.

Figure 1 shows an image of a drone.



Figure 1

One **digital** component of a drone is a GPS module.

Name **two other** digital components of a drone.

(2)

1

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2

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(d) IT is used for environmental monitoring in mountainous areas.

For example, sensors are used to monitor snow levels, so that avalanches can be predicted.

Explain **one other** use of IT for environmental monitoring.

(2)

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(Total for Question 2 = 10 marks)



- 3 The retail industry uses many different types of computer.
- (a) An electronic point of sale (EPOS) system is a computer with several different peripherals connected to it.

Figure 2 shows an image of an EPOS system in a store.



Figure 2

Name **two** peripherals attached to the EPOS system.

(2)

1

.....

2

.....

(b) An operating system is a software application.

(i) Describe the role of the operating system in managing a peripheral device.

(2)

(ii) Describe the role of the operating system in managing processes.

(2)



(c) **Figure 3** shows a vending machine that incorporates embedded systems.



Figure 3

To make a purchase:

- The customer puts money into the machine and types in a product code.
- The selected product is pushed forward, if it is available; otherwise, the customer is informed.
- The product drops into the void at the bottom of the machine, where the customer retrieves the product.
- Any change is given after the customer takes the product.

Explain how the components within the embedded systems allow the machine to take payment, supply the product and give change.

(6)

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Handwriting practice area with 24 horizontal dotted lines.

(Total for Question 3 = 12 marks)



4 Networks enable communication and utility infrastructures.

- (a) A device connects two networks, that use the same protocol, at the data link layer (layer 2) of the OSI model.

The device reads MAC addresses and data is forwarded only if necessary.

Identify the name for this device.

(1)

- ☐ A Hub
- ☐ B Bridge
- ☐ C Gateway
- ☐ D Router

- (b) Describe **one** difference between bandwidth and speed.

(2)

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- (c) Cloud storage allows users to store, access and synchronise their files by using a browser or mobile application.

Give **three** characteristics of cloud storage.

(3)

1

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2

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3

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This table shows situations involving the use of a network.

- (d) Complete the table to give the type of connectivity, medium and signal for **each** situation.

Some cells have been completed for you.

(6)

Situation	Connectivity	Medium	Signal
Computers and printers in a school share the same servers			Electrical
A laptop communicates with a wireless access point			
Two towns on either side of the Atlantic Ocean are connected	Wired		
An artificial satellite beams signals to receiving dishes mounted on houses			
Appliances in the home are connected to each other		Powerline	

(Total for Question 4 = 12 marks)



5 Train networks use IT systems to control access to secure areas in stations and operate timetables.

(a) Entrance to some areas of a train station is limited to authorised employees.

These areas require an entry system that uses **two-factor authentication**.

Employees have an identity badge with a magnetic stripe.

They are not allowed to carry mobile phones while in the station.

Draw a flowchart for the entry system in the space provided on the opposite page.

You **must** use the correct flowchart symbols.

(10)



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(b) Each train has a route from first station to last station.

Each train has a driver.

Here is a partially completed entity relationship diagram.

Complete the diagram by adding:

- a name for the entity
- two relationships and relationship types.

Primary keys must be underlined.

Foreign keys must have an asterisk (*).

(4)

Train

TrainCode

Driver

DriverCode
LastName
FirstName



(c) Due to a problem on the track, all trains from Oldhantset are cancelled.

Oldhantset station codes begin with the letters OHS.

The database includes this table.

tbl_arrival				
arrivalID	platform	trainCode	sourceStation	arrivalTime
4702	18	WTR8118	OHS339	09:10:00
4688	2	NRL4056	OHA251	09:48:00
4700	10	VRK1032	OHS596	10:10:00
4690	5	WRT8120	CDE786	10:10:00
4693	12	NRL6540	BCD543	10:38:00

Write an SQL statement to remove the trains from Oldhantset from the table.

(4)

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(Total for Question 5 = 18 marks)

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6 Organisations use a variety of tools and techniques to manage processes and data.

(a) Explain **one** way dataflow diagrams are used by organisations.

(2)

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- You could consider:

- the data collected and stored by the bus company
- the benefits and drawbacks of structuring the bus company data
- the value for the bus company of the information that can be extracted from the data.

(12)

[illegible]

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(Total for Question 6 = 14 marks)

TOTAL FOR PAPER = 80 MARKS

