Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel International Advanced Level

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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Q:1/1/1/

P 7 2 0 5 4 A 0 1 2 4

Pearson

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 Website traffic statistics show that mobile devices, such as smartphones, are now used more often than desktop PCs.

(a) A smartphone is an example of technological convergence. In the early 2000s, mobile phones were given extra features, such as text messaging. Since then they have been developed to perform other tasks that previously could only be done using a PC.

Give **two** tasks, apart from text messaging, that a smartphone can be used for that previously could only be done using a PC.

(2)

1 .....

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2 .....

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(b) Desktop PCs use firmware during the startup process.

(i) Identify the item that **must** be present in the firmware for a PC to be able to start.

(1)

☒ **A** Video driver

☒ **B** Operating system

☒ **C** Bootloader

☒ **D** Processor

(ii) State the type of memory used to store firmware.

(1)

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(c) Mobile devices communicate over the internet using the transmission control protocol and internet protocol (TCP/IP).

TCP/IP uses a four-layer model.

(i) Identify the correct sequence of layers when data is **sent**.

(1)

- ☒ **A** Application, transport, internet, link
- ☒ **B** Application, link, transport, internet
- ☒ **C** Link, transport, internet, application
- ☒ **D** Internet, link, application, transport

(ii) State what is meant by a network communication protocol.

(1)

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(d) Phone calls can be made over the internet using voice over internet protocol (VOIP).

TCP/IP and VOIP both use packets to carry data, but only VOIP can be used for making a phone call.

Explain why TCP/IP is not suitable for making a phone call.

(2)

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(e) Mobile devices can connect to wireless networks at public Wi-Fi hotspots.

(i) When a device connects to a hotspot it needs an IP address.

IP addresses can be static or dynamic.

Explain why a mobile device should be allocated a **dynamic** IP address.

(2)

(ii) The mobile device will send its media access control (MAC) address to the hotspot.

Explain why the MAC address is used in making the connection.

(2)

(Total for Question 1 = 12 marks)

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QUESTION 2 BEGINS ON THE NEXT PAGE.

2 A company that sells flowers has replaced its paper-based transaction system with an IT system.

(a) Flowers that are available to order are displayed on the company's website.

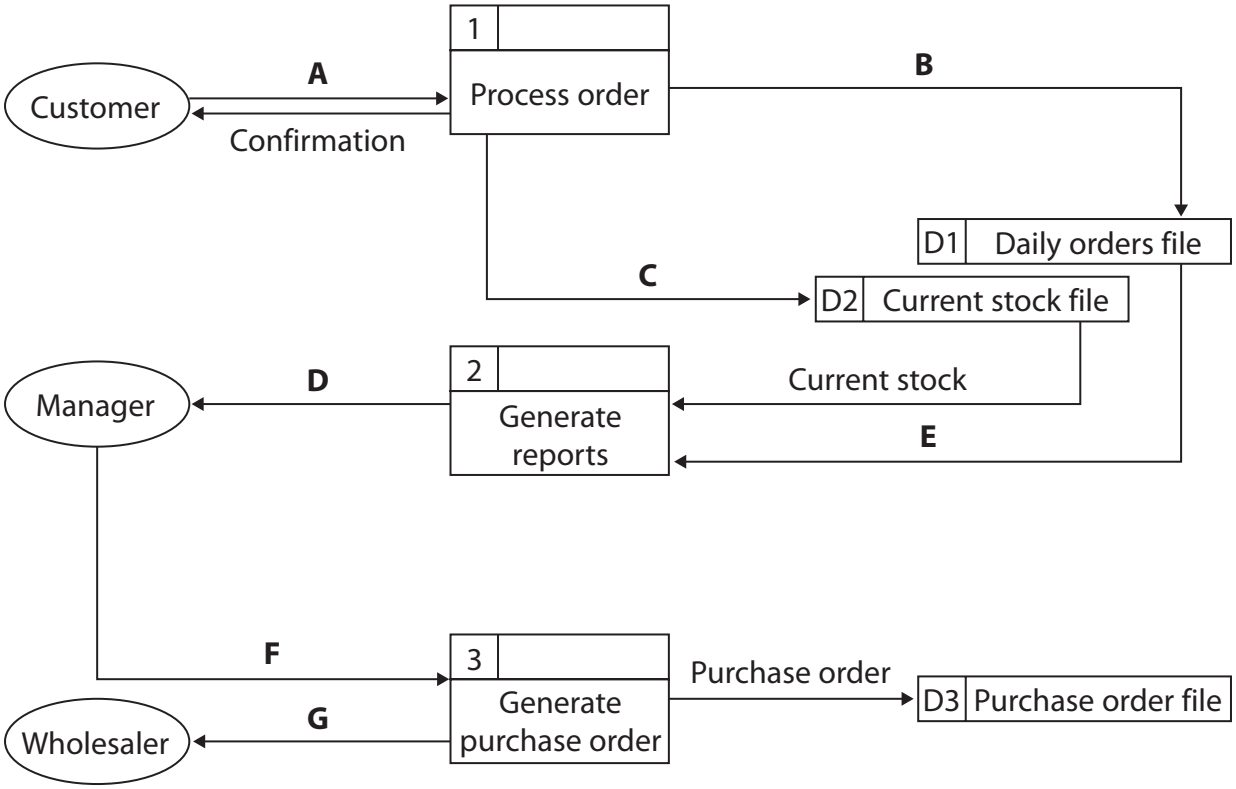
Customers order flowers online.

The company's current stock file is updated as each order is processed.

Stock and order reports are sent to the manager at the end of each day.

After reading the reports, the manager decides what new stock needs to be ordered from the wholesaler.

Here is a partially completed dataflow diagram for this process.



Dataflow is indicated by arrows.

Complete the table by stating what data is moving for the labels A to F.

The first one is done for you.

(6)

Label	Data
A	Order
B	
C	
D	
E	
F	
G	

(b) In the paper-based system orders were taken by phone and recorded on order pads.

At the end of each day the manager reviewed the orders that had been placed and purchased new stock.

Explain **one** advantage **to the company** of changing from a paper-based system to an IT system.

(2)

(c) The company's change from a paper-based system to an IT system has an environmental impact.

(i) Explain **one positive** environmental impact.

(2)

(ii) Explain **one negative** environmental impact.

(2)

(d) When flowers are delivered to a customer, the driver records the event on a tablet.

On return to the company's premises the delivery records are transferred from the tablet to the company's IT system.

(i) Identify the method that will transfer the records in the shortest time, **once a connection has been made**.

(1)

☒ **A** Bluetooth

☒ **B** USB C cable

☒ **C** Ethernet cable

☒ **D** Micro USB cable

(ii) The tablet is location aware.

Explain how the tablet 'knows' when it is on company premises.

(2)

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(Total for Question 2 = 15 marks)

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3 A garden centre stores information about its plants and customers.

(a) The garden centre collects and stores both structured and unstructured data.

Explain the difference between structured and unstructured data.

Where possible, support your explanation using examples of structured and unstructured data that the garden centre might use.

(6)

(b) The garden centre database includes these tables.

Sample data is shown in the tables.

tbl_supplier		
supplierID	**supplierName**	**telephoneNumber**
GS35	Jon's Plant Nursery	07700900563
GS67	Hall's Cross Plants	01632775999
GT06	The Bulb and Tuber Centre	02079460883

tbl_plant					
productID	**officialName**	**commonName**	**flowerColour**	**height**	**supplierID**
GC56	Teucrium fruticans	Tree germander	Purple	1.2	GS67
GC57	Cheilocostus speciosus	Crêpe ginger	White	1.3	GS22
GD39	Mimosa pudica	Sensitive plant	Pink	1.5	GT03
GD40	Mimosa turneri	Desert mimosa	Pink	3	GT03

(i) Name a primary key used in the database.

(1)

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(ii) Name a foreign key used in the database.

(1)

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(iii) State the data type for height.

(1)

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(iv) State the data type for telephoneNumber

(1)

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(c) A customer brings in a photograph of a plant she wants to buy.

She says that the plant has white flowers and is at least two metres tall.

The garden centre identifies the plant as a type of mimosa.

Write an SQL query that:

- finds all the mimosa plants that meet the criteria
- displays the official name of each plant, and the names and telephone numbers of the suppliers, if any, who stock that plant
- orders the list alphabetically by supplier name.

(6)

(Total for Question 3 = 16 marks)

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QUESTION 4 BEGINS ON THE NEXT PAGE.

4 Tanvik makes and sells decorative candles.

He wants to expand his business by creating a website for online sales.

(a) Tanvik's website has an IP address and a domain name.

Explain why a domain name is needed.

(2)

(b) The website can be built using static or dynamic web pages.

Describe **one** difference between static and dynamic web pages.

(2)

(c) A friend tells Tanvik that he could get more online sales of his candles by improving the digital footprint of his business.

Discuss how Tanvik might improve the digital footprint of his business.

(6)

(Total for Question 4 = 10 marks)

5 Paula has a network with a home office and wants to add an entertainment room.

Paula has these requirements.

- The existing home office has a PC and network-attached storage device (NAS). These are connected by Ethernet and will remain as they are.
- The internet connection comes into the house in the home office. It will be shared with the rest of the network.
- The rest of the house has a single Ethernet connection from the home office.
- Paula has a laptop that connects to the network by Wi-Fi. This must still be possible.
- The entertainment room will have a media server, a sound system, a projector and a television. These must all have Ethernet connections.
- The sound system will be controlled by the projector via Bluetooth.
- The television will be able to mirror a screen display from any mobile device that has Wi-Fi enabled.

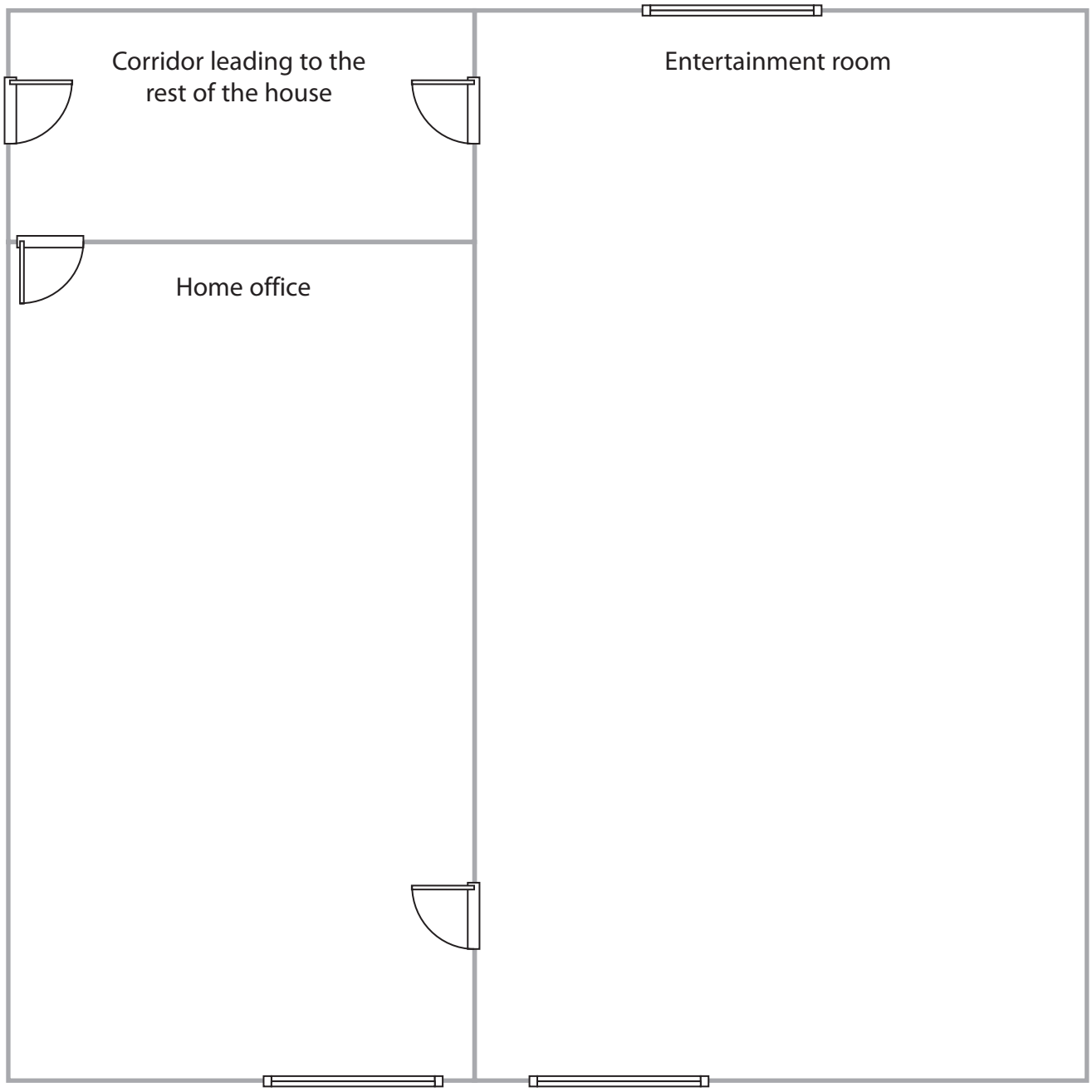
(a) Complete the diagram to show a network design that will meet Paula's requirements.

You must:

- represent an Ethernet connection by a solid line
- represent a wireless connection by a line of dashes.

You may represent network components by a labelled box or symbol.

(10)



(b) Paula's network can be improved by adding a hardware firewall.

(i) Draw an X on your network diagram to show where the hardware firewall should be located.

(1)

(ii) Explain **one** advantage of a hardware firewall over a software firewall.

(2)

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(c) When a video is sent to the projector it requires an Ethernet cable connection but the audio track for that video can be sent to the sound system via Bluetooth.

Explain why the video must be sent by Ethernet but the audio only needs Bluetooth.

(2)

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(Total for Question 5 = 15 marks)

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QUESTION 6 BEGINS ON THE NEXT PAGE.

6 A new purpose-built sixth form college will be opening next year.

The college will have 1200 students.

The college has these decisions to make.

1. Whether students will be allowed to use their own digital devices for their college work or only be able to use college-provided hardware.
2. Whether to use web-based software applications, such as online productivity apps, or locally-installed software.

Evaluate the options and make recommendations on the decisions that the college should make. You could consider:

- technical support
- security
- connectivity.

(12)

(Total for Question 6 = 12 marks)

TOTAL FOR PAPER = 80 MARKS

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