Please check the examination details below before entering your candidate information

Candidate surname	Other names

Pearson Edexcel
International Advanced Level

Centre Number | Candidate Number

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.
- Good luck with your examination.

Turn over ▶

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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 Julie is a website developer. She designs and builds websites to meet the requirements of clients.

(a) Julie creates images for some websites. She licenses these images using creative commons licensing.

State **two** creative commons licence conditions that she could apply.

(2)

1 .....

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2 .....

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(b) Julie uses diagrams to show a website's functionality to a client.

(i) Identify which **one** of these diagrams would be a flowchart.

(1)

☒ **A** Site map, showing the hierarchy of the pages and the links between them

☒ **B** User journey, showing the steps a user takes to perform a task on the website such as making a purchase

☒ **C** Wireframe, showing the elements that exist on a page

☒ **D** Data model, showing the data structures used for server-side processes

(ii) Using a flowchart is better than using a text description to explain a website's functionality to a client.

Identify the reason that **best** describes why it is better to use a flowchart.

(1)

☒ **A** A flowchart takes up less space than a text description

☒ **B** A flowchart is easy to email

☒ **C** A flowchart does not depend on a particular language

☒ **D** A flowchart is better for describing complex connections

(c) Some of the websites have processes that use data and information.

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

(1)

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.....

(ii) State what is meant by the term **information**.

(1)

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(d) Some websites store customer data online.

One risk to this data is malware.

(i) Anti-malware may be used to reduce the risk of malware.

State **two** activities that anti-malware performs that reduce the risk.

(2)

1 .....

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(ii) Explain **one** security risk, other than malware, to customer data stored online.

(2)

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(e) Some of Julie's websites use scripts to make them interactive.

These may be run as client-side scripts or server-side scripts.

(i) State the difference between a client-side script and a server-side script.

(1)

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(ii) Explain **one** reason why a website owner might prefer to use client-side scripts rather than server-side scripts.

(2)

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(Total for Question 1 = 13 marks)

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2 A small business needs a new IT system.

The design of the new system needs to specify the hardware, software, and processes required.

(a) The new IT system must be fit for purpose.

Explain how fitness for purpose of a new system is evaluated.

(3)

Figure 1 is a diagram of the network for the new IT system.

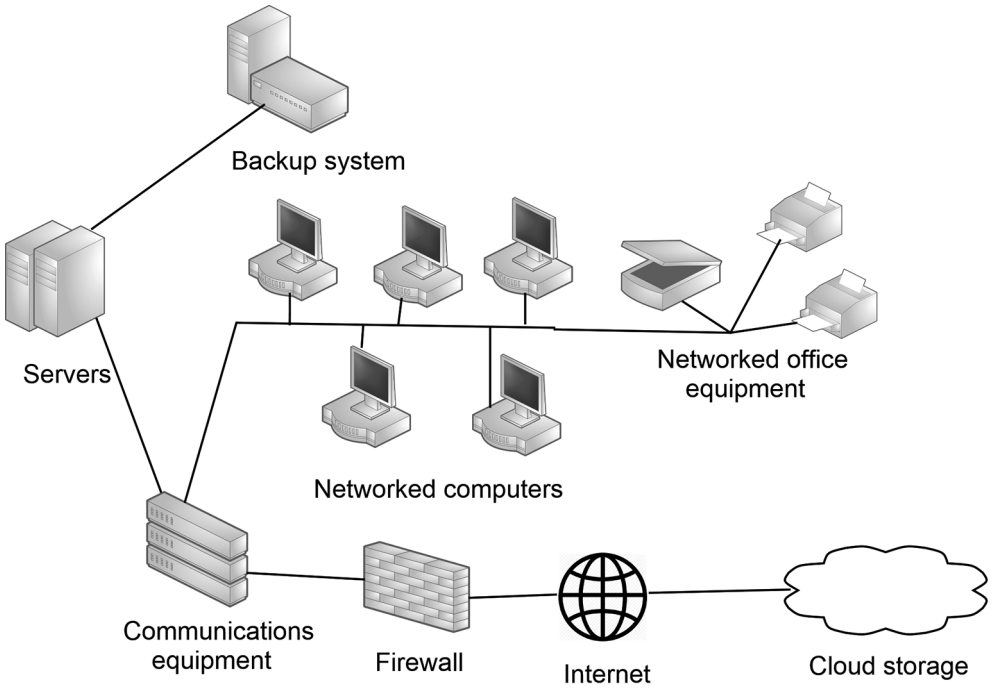

Figure 1

(b) (i) The system designer should consult with the people who will be working with the new IT system. One of these would be the business owner.

Give **two other** people who should be consulted.

(2)

1 .....

2 .....

(ii) Explain **two** network-based security processes that should be specified and designed for the new IT system.

(4)

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(c) Discuss how network metrics could be used to evaluate this network.

(6)

(Total for Question 2 = 15 marks)

3 Computer software includes system software and applications software.

(a) Installed software may be patched or upgraded.

Describe **one** difference between patching and upgrading software.

(2)

(b) Sometimes a software update may cause compatibility problems.

Explain **two** reasons why compatibility may be a problem.

(4)

1

2

(c) Mobile devices use apps for playing media files. Some of these apps send the media files to the cloud for processing.

Discuss the advantages and disadvantages of using cloud computing for processing data in this way.

(6)

(Total for Question 3 = 12 marks)

4 A small online store uses a database to track its transactions.

These five entities will be used in the database:

Buyer (Buyer_ID, Username, Password, Email, Shipping_name, Shipping_address, Phone)

Product (Product_ID, Product_name, Description, Price, Stock_remaining)

Purchase (Purchase_ID, Buyer_ID, Product_ID, Quantity, Delivery_stage)

Shopcart (Shopcart_ID, Buyer_ID, Product_ID, Quantity)

Review (Review_ID, Buyer_ID, Product_ID, Comment)

A buyer can purchase only one product at a time.

The buyer puts a product into their shopcart until they are ready to pay for it.

Once paid for, a purchase record is generated for the product.

Buyers can leave product reviews.

(a) Sometimes a value for a field is calculated rather than input.

Identify which **one** of these fields can be calculated.

(1)

☒ **A** Purchase.Quantity

☒ **B** Shopcart.Quantity

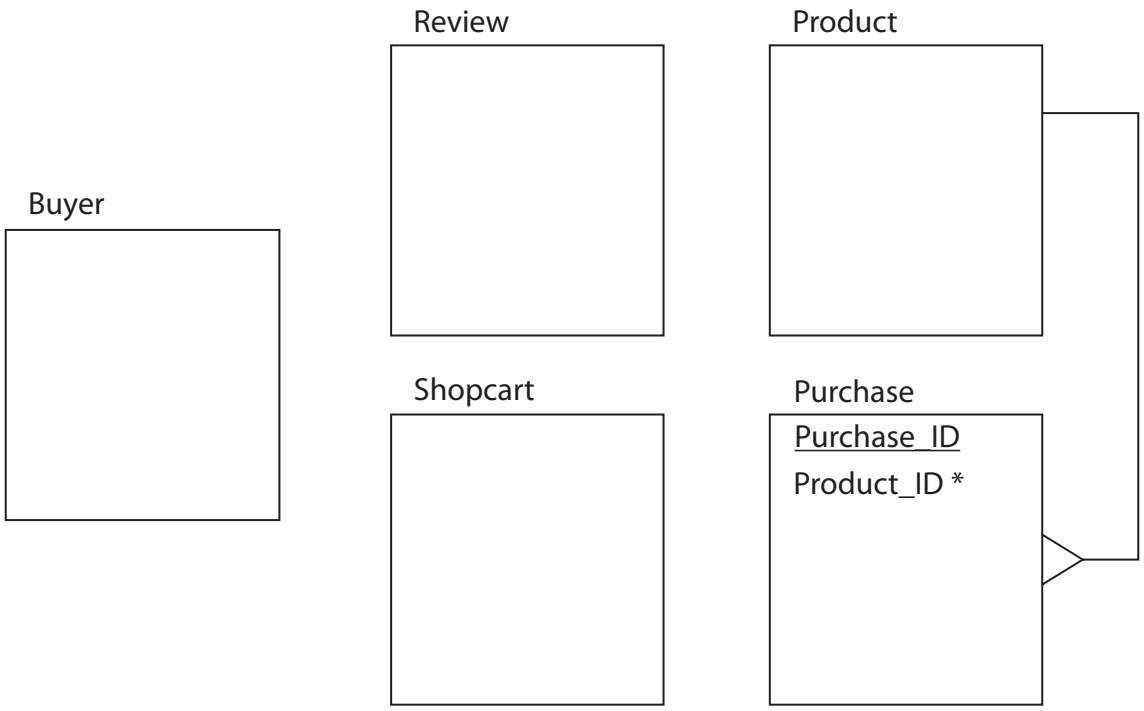
☒ **C** Purchase.Delivery_stage

☒ **D** Product.Stock_remaining

(b) Here is a partially completed entity relationship diagram for this database.

Complete the diagram to show:

- primary keys, which must be underlined
- foreign keys, which must have an asterisk (*)
- relationships and types.



(6)

(c) When a buyer purchases a product, they must log on to their account. The store uses two-factor authentication.

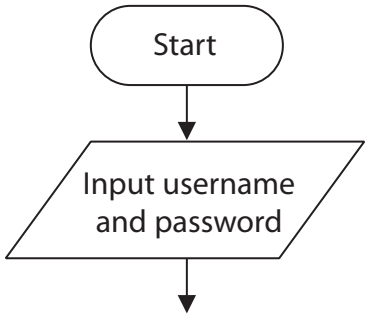
One factor is the buyer's password, stored in the database.

The second factor is a one-time code generated during the logon process and sent to the user's phone. The code is time limited to five minutes. If the user does not use the code within that time, they must restart the logon process.

There is no limit on how many times a user may enter a username, password or code.

Complete the flowchart to show how the logon process works.

(6)



(d) The owner of the online store uses structured query language (SQL) to get information from the database.

Give **three** reasons why SQL is used to manipulate data in databases.

(3)

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(Total for Question 4 = 16 marks)

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5 A government is planning to develop a new beach resort.

The resort will be built near an existing fishing village. It will have accommodation for 3000 people. The fishing village has a population of 500.

The area has year-round sunshine but limited water resources. The village residents are concerned about damage to their environment, especially pollution of inshore fishing grounds.

The government claims that smart features in the resort will prevent any environmental damage.

Evaluate how the use of information technology could have a positive impact on environmental monitoring and efficient use of resources in this context.

Your evaluation should include:

- environmental monitoring
- efficient use of resources
- your conclusion about the government's claim.

(12)

(Total for Question 5 = 12 marks)

6 A bus company provides hop-on hop-off buses for tourists.

The buses run on four routes, stopping at tourist attractions. Speakers by each seat give a commentary on what can be seen as a bus travels around its route.

Customers purchase tickets for one or more routes.

The bus company controls the buses and ticketing from servers at the main bus station.

There is a hot backup system at a secondary bus station. The hot backup duplicates the main system. It is updated in real time and can take over immediately if needed.

A mesh Wi-Fi network links bus stations, buses, and bus stops.

Tickets may be purchased at numerous shops around the city. A ticket is a plastic card holding details of the routes and the date for which it is valid.

Ticket outlets and buses have near field communication (NFC) devices that can read from and write to the tickets.

Each bus stop has a display screen. The screen shows the route and estimated arrival time of the next five buses.

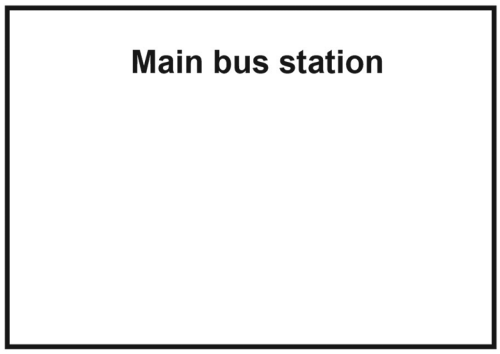
Each bus has a GPS receiver. The buses report their position every minute and the servers update the display screens.

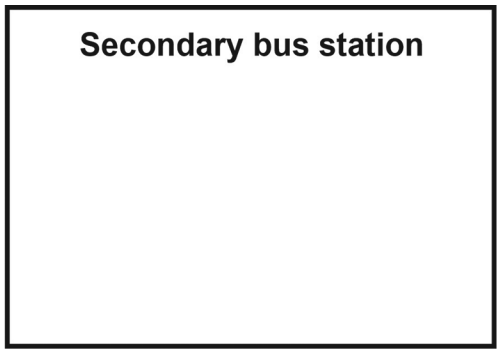
Complete the diagram to show a network design for the system.

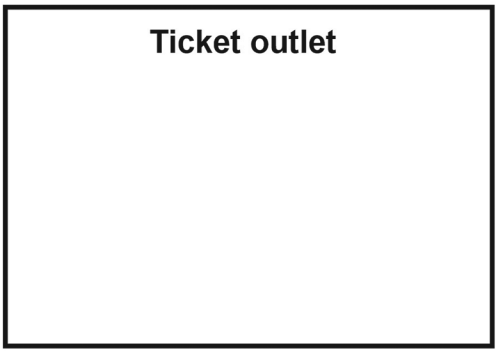
Indicate:

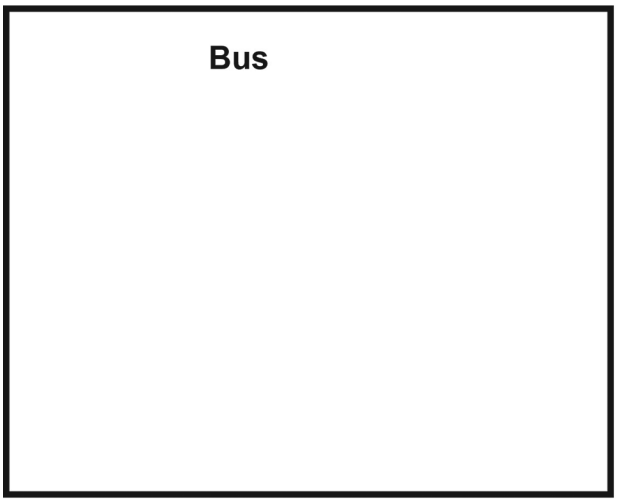
- wired connections by solid lines
- fibre optic connections by double solid lines
- wireless connections by dashed lines
- network components by labelled symbols.

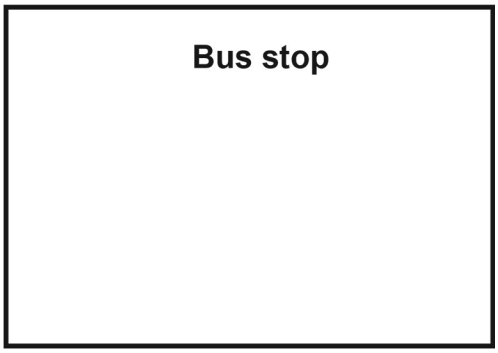
(12)

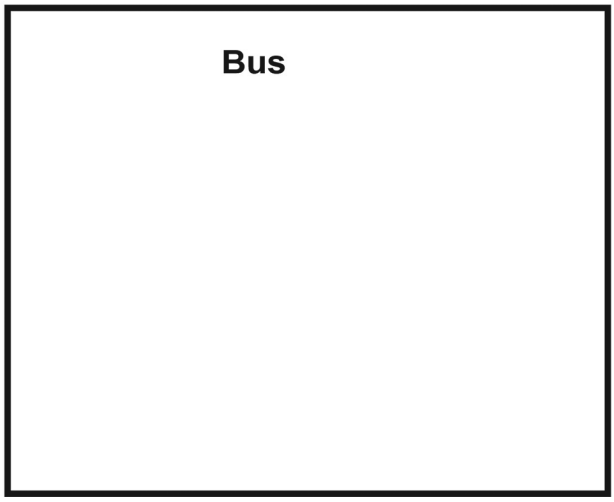


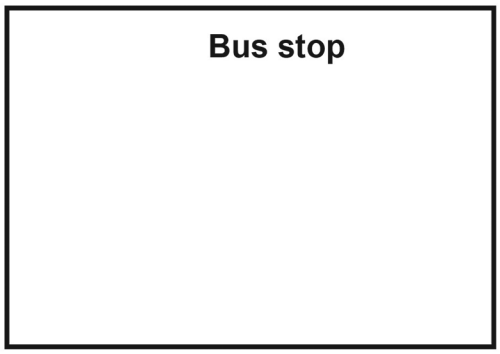












(Total for Question 6 = 12 marks)

TOTAL FOR PAPER = 80 MARKS

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