

Please check the examination details below before entering your candidate information

Candidate surname		Other names	
Pearson Edexcel International Advanced Level		Centre Number 	Candidate Number
Thursday 23 May 2019			
Morning (Time: 2 hours)		Paper Reference WIT11/01	
Information Technology International 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.

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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** Sarah has purchased a smart TV. The features of the TV allow her to browse the internet, deal with email and use interactive media.

(a) (i) Identify the statement that **best** describes Sarah's TV.

(1)

- ☐ **A** The TV is an example of technological convergence
- ☐ **B** It is safer to browse with the TV than with a laptop
- ☐ **C** The TV is an example of parallel development
- ☐ **D** Sarah can store her email messages on the TV

(ii) The TV contains an embedded system.

Identify the statement that **best** describes an embedded system.

(1)

- ☐ **A** An embedded system must contain flash memory
- ☐ **B** An embedded system is controlled by an external control unit
- ☐ **C** An embedded system is designed to perform a small number of specific functions
- ☐ **D** An embedded system must remain powered at all times

Sometimes when Sarah turns her TV on, a message is displayed saying that the firmware is being updated.

(b) (i) State **one** type of memory used to store firmware.

(1)

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(ii) One function of a TV's firmware is to store the operating system.

Give **two** other functions of the firmware.

(2)

1

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2

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Digital devices, such as Sarah's TV, have features to assist those with disabilities.

- (c) (i) Describe **two** features of a smart TV's user interface that assist people with a visual impairment.

(4)

1

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2

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- (ii) Explain **one** moral/ethical reason why manufacturers of digital devices include accessibility features in their products.

(3)

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(Total for Question 1 = 12 marks)



2 Hilmi Megat has a personal website.

Hilmi uses the website to tell people about the places that he has travelled to.

- (a) The website's domain name is `www.hilmi-megat.com` and the IP address is `203.0.113.15`.

When someone wants to visit the website, they enter the domain name into their browser address bar.

Describe how the connection is made to IP address `203.0.113.15`.

(3)

Hilmi uses a web-hosting company to host and support his website.
The company provides software tools to make both static and dynamic web pages.

- (b) Give **three** differences between static and dynamic web pages.

(3)

- 1
- 2
- 3



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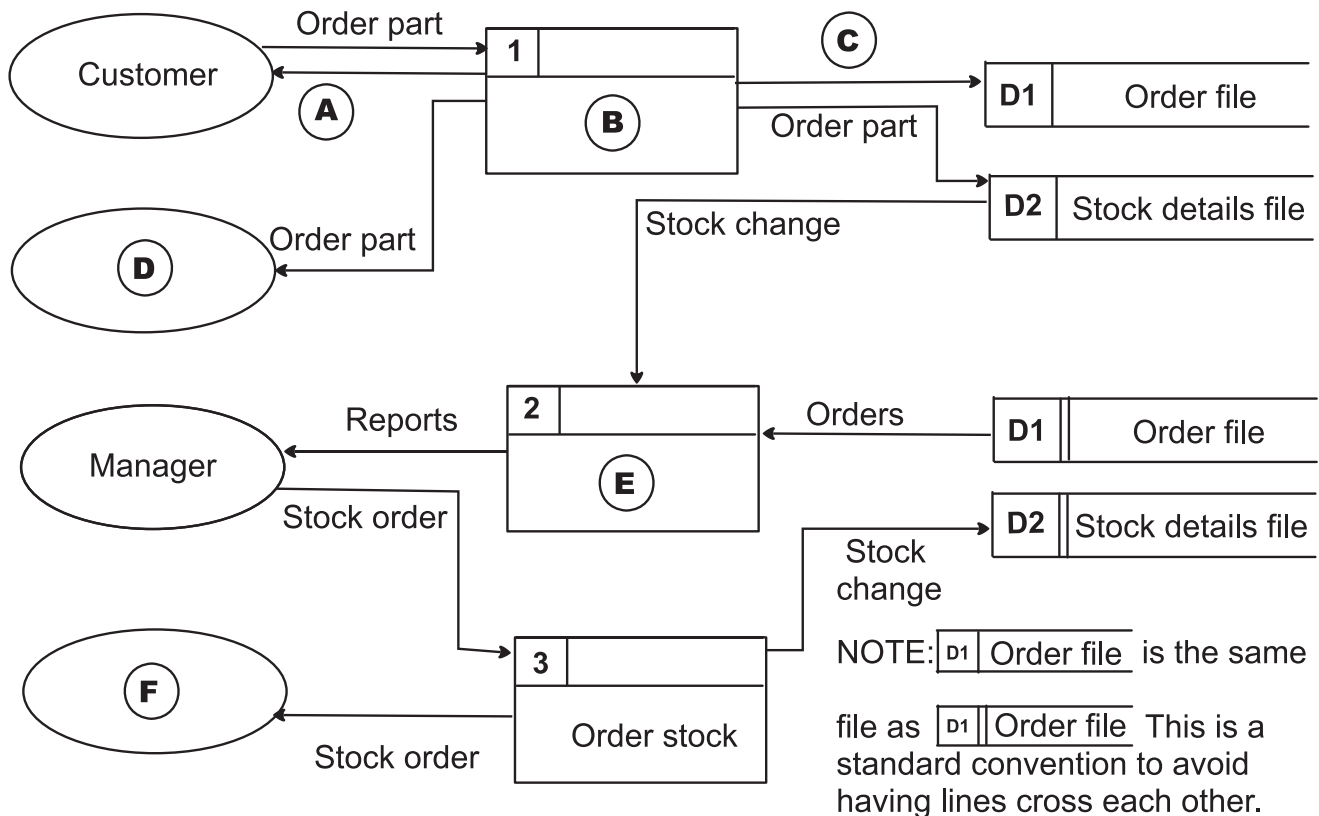
P 6 2 7 1 6 A 0 5 1 6

3 A car dealer has a spare parts department where customers buy parts for their cars.

A customer places an order. The order is passed to a member of staff who finds the part in the stockroom. The part is then given to the customer together with an invoice.

The number in stock of that part is updated. The manager orders further stock from a supplier when needed.

(a) Here is a partially completed data flow diagram for this process.



Complete the table to show the names for the labels A–F.

(6)

Label	Name
A	
B	
C	
D	
E	
F	

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- (b) A customer wants to buy a replacement light bulb for a car. The bulb is no longer manufactured. The car dealer can order one from a specialist supplier. A member of staff uses a specialist database to find suppliers of the bulb.

The database includes these tables. Sample data is included.

tbl_supplier		
supplierID	name	telephone
S784	Bloggs Rare Parts	01521665717
S131	Vintage Spares	01265775836
S461	Bulbs and Batteries	01831231445

tbl_bulb						
bulbID	manufacturer	partnumber	voltage	supplierID	stocklevel	watts
LA563	Lucas Electrical	LLB71Ba15d	12	2784	4	36
LA517	Lucas Electrical	LLB187APG20/4	12	1154	9	24
LA461	Osram	581 PY21W	12	1887	12	21

The manufacturer of the bulb is Lucas Electrical. The member of staff can only make out **LL~~80 1157 BAY~~D** of the part number: where the symbol ~ indicates an unreadable character.



- (i) Write an SQL query that will display names and contact details of suppliers who are likely to have the bulb in stock. List the suppliers in alphabetical order.

(6)

- (ii) Explain **one** advantage for the **car dealer** of having access to the specialist database.

(3)

(Total for Question 3 = 15 marks)



- 4 The Open Systems Interconnection (OSI) model is a 7-layer model of communications protocols. It is used to connect computers over the internet.

Data passing through the layers is encapsulated.

- (a) Describe the process of encapsulation in this context.

(3)

- (b) Explain the OSI model using a labelled diagram.

(6)



(c) Transmission Control Protocol/Internet Protocol (TCP/IP) is a 4-layer model of communications protocols.

- (i) Explain **one** difference between the TCP/IP model and the OSI model. Do not include details of layer names or functions.

(4)

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- (ii) Most internet traffic uses Internet Protocol version 4 (IPv4) but this is being replaced by IPv6.

Give **two** reasons why IPv6 is replacing IPv4.

(2)

1

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2

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(Total for Question 4 = 15 marks)



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- 5** Sanjeev writes short stories for magazines. He does not have a permanent position and only gets paid when a story is published. Some stories are commissioned by a magazine's editor, others are submitted in the hope that they will be accepted and published.

Sanjeev researches material for his stories by using the internet. He also has an active social media presence for his work and personal life.

By using the internet, Sanjeev has generated both an active and a passive digital footprint.

Evaluate the advantages and disadvantages for Sanjeev of the digital footprints that he has generated.

You should consider:

- the impact on Sanjeev's working and personal life
- how Sanjeev should manage his footprints going forward.

(12)



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(Total for Question 5 = 12 marks)



- 6 In the country of Varma Loko, main roads often run through small villages. The Transport Ministry has installed a traffic management system in each village.

One crossroads in each village has a set of traffic lights controlling the main road and the side roads. The system is controlled by a computer.

These are the system requirements.

- The default setting is for the lights on the main road to be green (go) and the lights on the side roads to be red (stop).
- Proximity and speed sensors are used to detect the **two** conditions for when the lights will change.

The conditions are:

- when a vehicle stops at a red light on the side road
- when a vehicle enters the village on a main road over the speed limit.
- An emergency vehicle can send a radio signal to change the lights.
- The lights reset to the default setting after a set time.
- If a vehicle moves past a red light on any road, a digital camera takes a photo and uploads it to the local police headquarters via the internet.

- (a) Complete the diagram to show a network design that will meet these requirements.

You only need to show devices and connections for the lower side road and the right-hand part of the main road.

You should:

- represent a cable connection by a solid line
- represent a wireless connection by a line of dashes
- represent network components by a labelled box or symbol
- include appropriate network components in the control box.

(10)



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Main road



Side road



Traffic lights



Control box



(b) The Transport Ministry wants to photograph every vehicle that passes through the crossroad. A Civil Liberties Group opposes the idea on the grounds that the system might be abused by the government.

- (i) Explain **one** reason the government could use to justify photographing every vehicle.

(2)

- (ii) Describe **one** way in which the government might abuse this system.

(2)

(Total for Question 6 = 14 marks)

TOTAL FOR PAPER = 80 MARKS

