

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Pearson Edexcel
International
Advanced Level

Centre Number

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Candidate Number

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Sample assessment material for first teaching
September 2018

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.*

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 Gareth is a graphic designer. He works from home. His home network is shown in **Figure 1**.

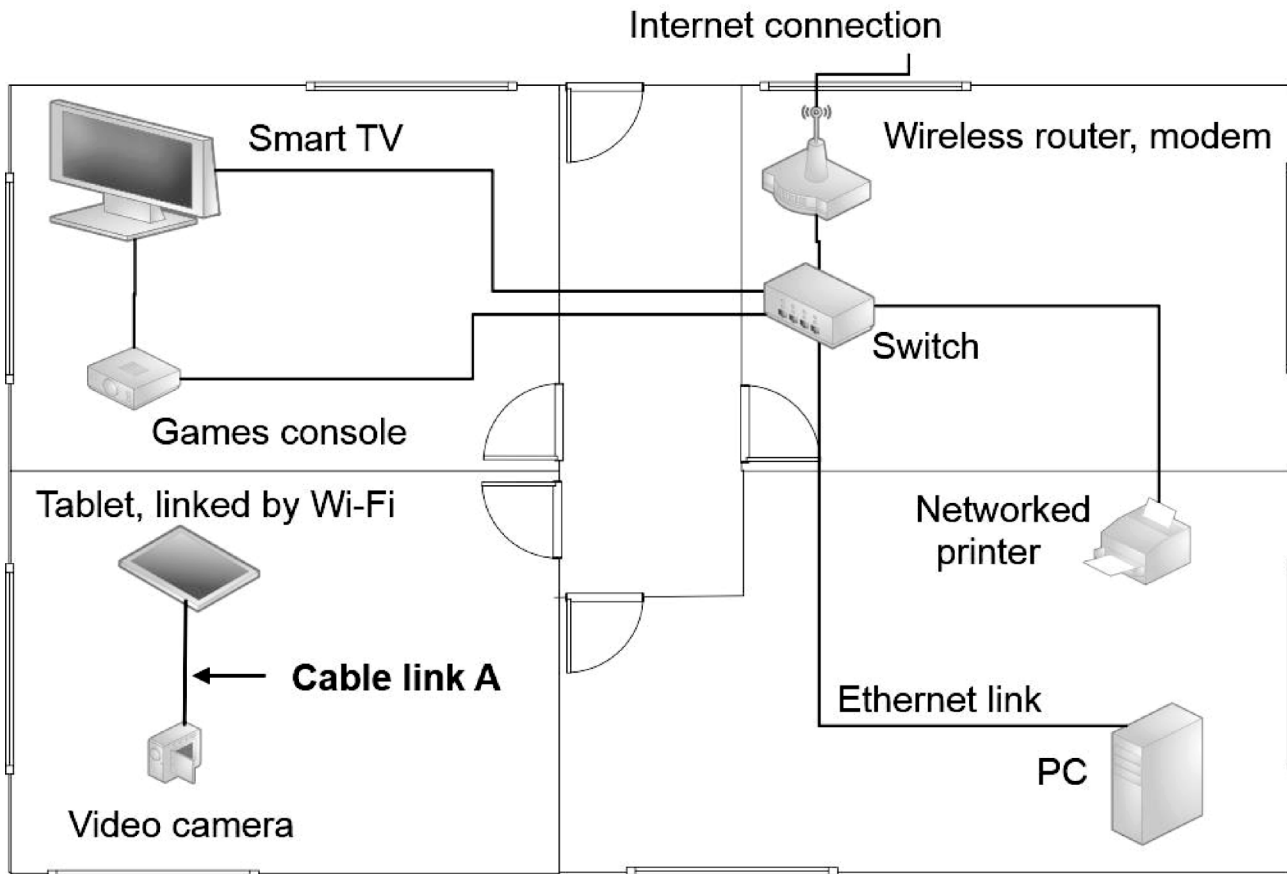


Figure 1

- (a) Cable link A is a Firewire connection between the tablet and the video camera.

Identify **two other** types of cable connection that are suitable for this purpose.

(2)

Type 1

Type 2



(b) The network uses a switch.

Explain how a switch differs from a hub.

(3)

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(c) The specification of the games console shown in **Figure 1** includes:

- 2 GHz 8-core CPU
- 800 MHz graphics chip clocked at 1.8 teraflops (flops = floating point operations per second)
- 8 GiB RAM with read / write operations clocked at 2.5 GHz
- 500 GiB (5,400rpm) hard drive with a read / write rate of 100 MiB/sec
- SD slot with a 64 GiB SD card and a read / write rate of 80 MiB/sec

(i) Identify the expression that shows how long it would take to read all the data from a full 64 GiB SD card.

(1)

- A** $(64 \times 1000 \times 1000 \times 1000) / 80$ seconds
- B** $(64 \times 1024 \times 1024 \times 1024) / (80 \times 1024 \times 1024)$ seconds
- C** $(64 \times 1024 \times 1024 \times 1024) / (80 \times 1000 \times 1000)$ seconds
- D** $(64 \times 1024 \times 1024 \times 1024) / (80 \times 1024)$ seconds

(ii) Identify the statement that describes the console correctly.

(1)

- A** The console has 500 GiB of primary storage
- B** The CPU can perform 16,000,000,000,000 operations per second
- C** The graphics chip can perform more operations per second than the CPU
- D** The RAM is not fast enough to support the hard drive's maximum read / write rate



(d) The router in **Figure 1** acts as a DHCP server. It allocates IP addresses to devices. IP addresses can be static or dynamic.

(i) Explain why the printer should be allocated a static address.

(2)

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(ii) Explain why the tablet should be allocated a dynamic address.

(2)

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(e) The smart TV and PC are on the network shown in **Figure 1**.

Gareth uses the handset of the smart TV to select a video stored on the PC.

The video is transferred to the internal storage of the TV.

Create a data flow diagram to show this process.

(6)



(Total for Question 1 = 17 marks)



2 Ananya wants to set up a lighting system for her house.

The system will use a ZigBee network.

Ananya has:

- ten lighting panels
- a ZigBee coordinator
- four ZigBee routers.

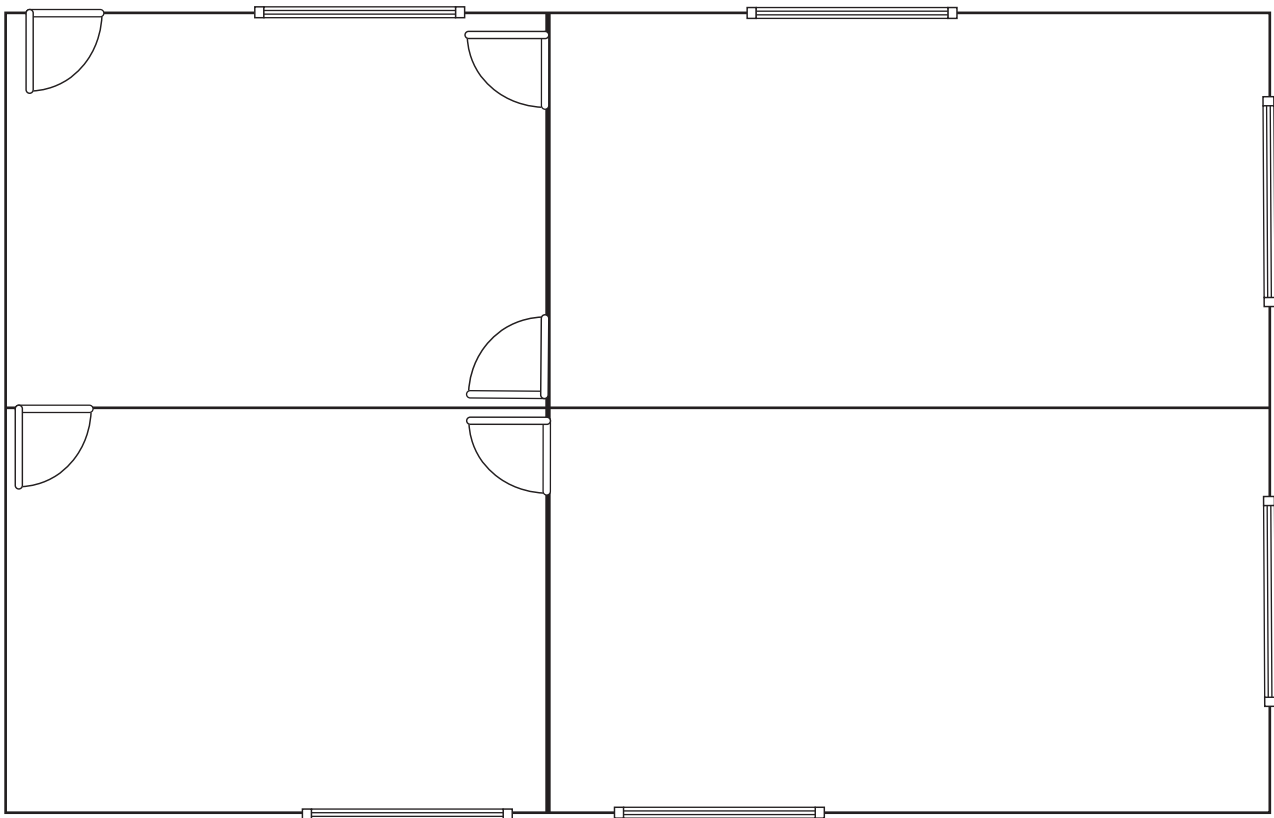
The lighting system will be controlled from:

- the PC through a USB connection
- the smartphone using Wi-Fi.

(a) Draw and label a ZigBee network diagram for the lighting system.

Use this plan of Ananya's house.

(6)



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(b) The ZigBee devices use the IPv6 protocol. The PC uses IPv4.

Describe how IPv6 addresses differ from IPv4 addresses.

(4)

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(c) Ananya wants to expand her ZigBee network to include devices other than lighting.

Give **two other** examples of ZigBee devices that she could include.

(2)

1

2

(d) (i) State **one** advantage for Ananya of using ZigBee rather than Wi-Fi to connect devices in her home.

(1)

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(ii) Explain **one** disadvantage for Ananya of using ZigBee rather than Wi-Fi to connect devices in her home.

(2)

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(Total for Question 2 = 15 marks)

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3 A company stores customer data in cloud storage.

(a) (i) State what is meant by 'cloud storage.'

(1)

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(ii) Describe **two** security risks associated with cloud storage.

(4)

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The company wishes to establish a branch office in another country.

(b) Describe what the company needs to consider in terms of data protection when the branch office is established.

(3)

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(b) Explain how IT could be used to have a positive impact on the quality of the town's environment.

(6)

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(Total for Question 4 = 12 marks)



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5 A company sells mobile phones in shops. It keeps staff and customer data in a relational database.

These five entities will be used in the database:

Customer (Customer_name, Customer_number)

Staff (Staff_name, Staff_number, Shop_reference)


Sale (Sale_ID, Staff_number, Customer_number, Date)

Shop (Shop_name, Shop_reference, Address_line1, Address_line2, Town, Telephone)

Sale_detail (Sale_ID, Product_ID, Quantity)

(a) Create an entity relationship diagram for this database. Annotate your diagram to show the primary and foreign keys.

(9)



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(b) The database is a form of structured data.

Explain **one** difference between structured and unstructured data.

(3)

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(Total for Question 5 = 12 marks)

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Handwriting practice area with 20 horizontal dotted lines.

(Total for Question 6 = 12 marks)

TOTAL FOR PAPER = 80 MARKS





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Mark Scheme

Additional Sample Assessment Materials

Pearson Edexcel International Advanced
Subsidiary/Advanced Level in Information
Technology

Unit 1 (WIT11)

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

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November 2018

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Unit 1 AddSAM – Mark Scheme

Question number	Answer	Additional guidance	Mark
1 (a)	Award one mark for each type. <ul style="list-style-type: none"> • USB • HDMI 		2

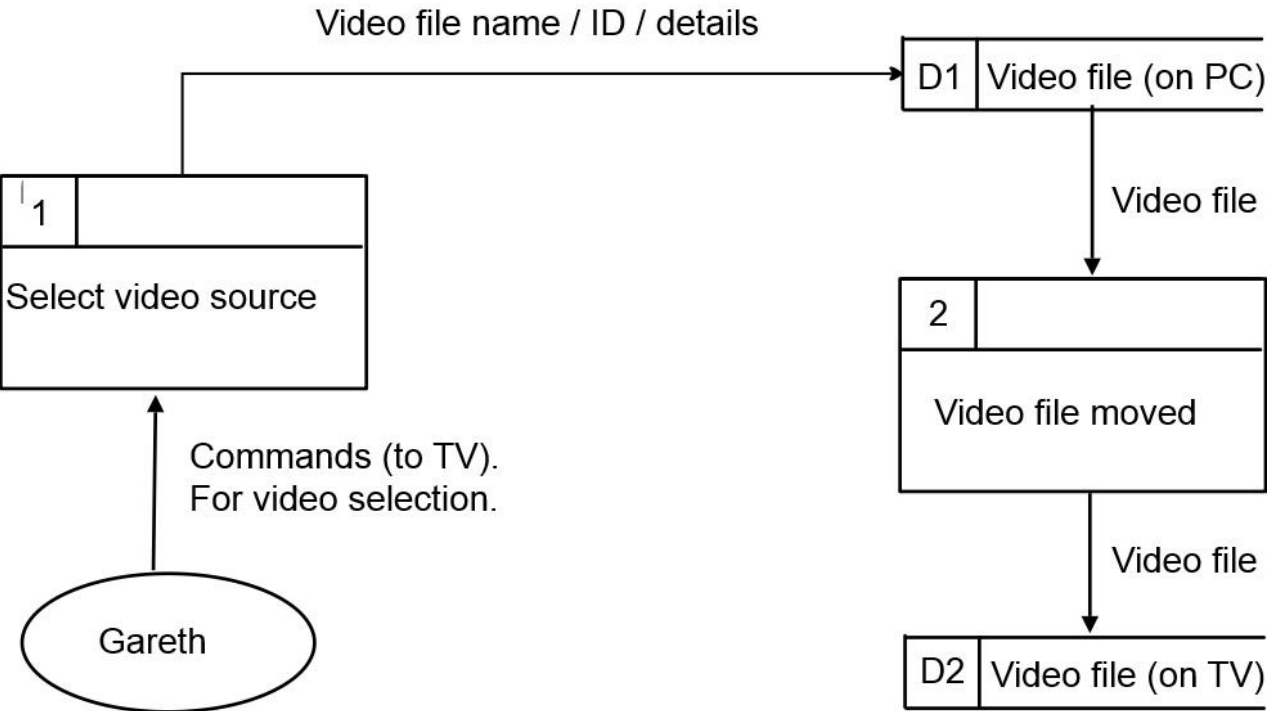
Question number	Answer	Additional guidance	Mark
1 (b)	Award one mark for each point up to a maximum of three marks. <ul style="list-style-type: none"> • Switches are intelligent/store information/store (MAC) addresses / hubs are dumb/do not store anything • Switches can target correct devices / hubs always port flood/send to all ports • Switches can operate in full duplex mode / communicates faster • Switches prevent or reduce collisions / give more reliable communications <p>Example Switches are intelligent (1) they can target the correct devices (1) whereas hubs always port flood (1)</p>	Accept reverse arguments for hubs.	3

Question number	Answer	Additional guidance	Mark
1 (c) i	B		1

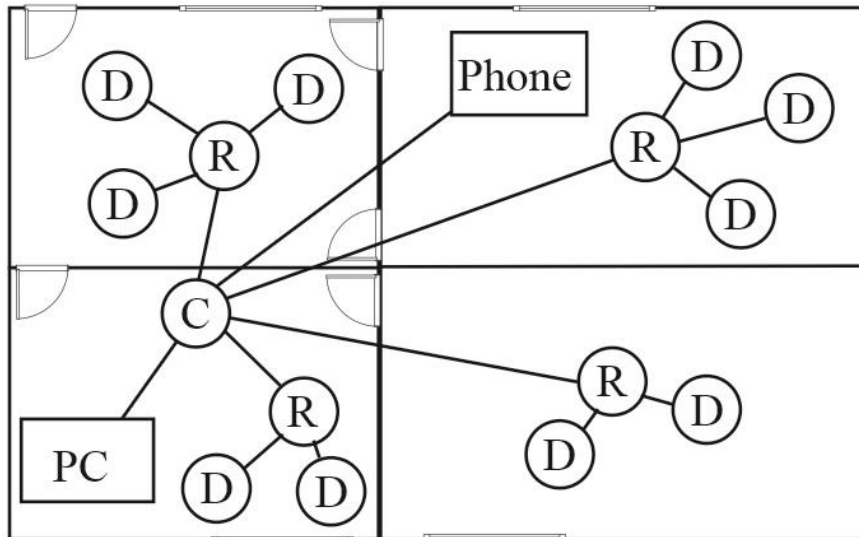
Question number	Answer	Additional guidance	Mark
1 (c) ii	C		1

Question number	Answer	Additional guidance	Mark
1 (d) i	<p>Award one mark for a reason and one mark for a linked justification/expansion. Such as:</p> <ul style="list-style-type: none"> • A static address once allocated never changes (even if the printer is turned off and on) (1) which means the printer can always be found by other devices / which means the devices do not have to reinstall the printer (driver) (1) • A static address does not need a DHCP server (on the network) (1) as the address does not change / is already known by other devices (1) 	Accept reverse arguments for dynamic address.	2

Question number	Answer	Additional guidance	Mark
1 (d) ii	<p>Award one mark for a reason and one mark for a linked justification/expansion. Such as:</p> <ul style="list-style-type: none"> • A tablet is a mobile device which is likely to connect to other networks (1) if it had a static IP address this might clash / cause connection problems / other networks will want to allocate a dynamic address (1) • Data on the tablet is less vulnerable to hacking (1) because a dynamic IP address can only be tracked to the network that allocated it (not to the individual device to which it is assigned) (1) • No need for Gareth to manually enter any settings in order to connect his tablet to the network (1) therefore less technical knowledge or admin access required (1) 	Accept reverse arguments for static address.	2

Question number	Answer	Additional guidance	Mark
1 (e)	<p>Award one mark for each correct symbol / connection + label up to a maximum of six marks</p>  <pre> graph TD Gareth((Gareth)) -- "Commands (to TV). For video selection." --> P1[1 Select video source] P1 -- "Video file name / ID / details" --> D1[D1 Video file (on PC)] D1 -- "Video file" --> P2[2 Video file moved] P2 -- "Video file" --> D2[D2 Video file (on TV)] </pre> <p>Award one mark for: The entity Gareth (1) Select video source process (1) Transfer file process (1) Both data stores (1) Data flow is correct (1) Meaningful labels (1)</p>	<p>Also accept variation of entity symbols /shapes that are in common use.</p>	<p>6</p> <p>Total 17</p>

Question number	Answer	Additional guidance	Mark
2 (a)	<p>Award one mark each for:</p> <ul style="list-style-type: none"> • PC connected only to coordinator • Coordinator near to PC • Phone connected only to coordinator • Coordinator connected to all routers, direct or through other router • Devices/lighting panels only connected to routers or coordinator • Diagram complete, 1 coordinator, 4 routers, 10 devices/lighting panels, PC, phone, sensible distribution (1 router per room min 2 devices per room) 	<p>Allow any reasonable topology, mesh, star, tree, hybrid. Allow any reasonable symbols.</p>	6



Question number	Answer	Additional guidance	Mark
2 (b)	Award one mark for each descriptive point up to a maximum of four marks. <ul style="list-style-type: none"> IPv4 uses four 1 byte decimal numbers, separated by a dot IPv4 addresses are 32 bits/4 bytes / e.g. 192.168.1.1 IPv6 uses hexadecimal numbers, separated by colons IPv6 addresses are 128 bits/16 bytes / e.g. fc00:1234:56:7:0:0:abc:def (need to be 8 sets of numbers) 	For IPv6 :: can be used to indicate zeros e.g. fc00:1234:56::abc:def is also valid	4

Question number	Answer	Additional guidance	Mark
2 (c)	Award one mark for each device up to a maximum of two marks. <ul style="list-style-type: none"> warning devices such as fire alarms / carbon monoxide alarms / motion sensors control devices such as switches / thermostats metering devices for gas / electricity / water entertainment devices such as speakers / media streamer security devices such as locks / intruder alarms 	Do not allow lighting devices Allow two devices of each kind	2

Question number	Answer	Additional guidance	Mark
2 (d) i	Award one mark for any of: <ul style="list-style-type: none"> simple to set up easily scalable/expandable uses less power / longer battery life 	Portability not acceptable	1

Question number	Answer	Additional guidance	Mark
2 (d) ii	Award one mark for a disadvantage and one mark for a linked justification/expansion. Such as: <ul style="list-style-type: none"> limited range/about 10 metres coverage (1) may need several routers instead of one WAP / may not be able to reach some areas of the house (1) less secure than Wi-Fi (1) because keys are known to have been compromised / relies on third parties/manufacturers for keys (1) relatively new technology (1) so limited types of device available / so is limited in how it can be used (1) 		2 Total 15

Question number	Answer	Additional guidance	Mark
3 (a) i	Award one mark for any one of: <ul style="list-style-type: none"> • storage is on remote computers/servers accessed via the internet (1) • storage owned/maintained/operated by third party accessed via the internet (1) 		1

Question number	Answer	Additional guidance	Mark
3 (a) ii	Award one mark for each risk and one mark for a linked expansion. Such as: <ul style="list-style-type: none"> • loss of control of data / data held by third party (1) privacy/encryption set by someone outside the company (1) • data leakage (1) third party employees could view/mishandle the data (1) • loss of control of (cryptographic) key management (1) keys shared with third parties increases risk (1) • less control over cloud credentials / access rights on the remote server (1) if misconfigured, stored files may be viewable/accessible by others (1) • data/files can be intercepted in transit (1) as data/files must travel on the internet (1) 	Do not accept generalised answers such as virus, hacking.	4

Question number	Answer	Additional guidance	Mark
3 (b)	Award one mark for each descriptive point up to a maximum of three marks for a linked description. <ul style="list-style-type: none"> • (data protection) laws in both countries • treaties/agreements that exist between the countries • extra restrictions on personal data / personal data may be allowed to move to a more restrictive country but then not be allowed to return • different countries have different exceptions to/interpretations of the same law. e.g. in the areas of fair use, public interest, national security. • different countries/courts have different ideas on where they have jurisdiction, whose law applies in certain situations. 		3

Question number	Answer	Additional guidance	Mark
3 (c) (i)	Award one mark for: Unique (non-physical) items that are a result of original creative thought.		1

Question number	Answer	Additional guidance	Mark
3 (c) (ii)	Award one mark for the first point and two marks for a linked explanation. <ul style="list-style-type: none"> • These agreements impose duties on a country to recognise/protect copyright granted in other countries (1) which means: <ul style="list-style-type: none"> ○ protection should be the same as protection granted to intellectual property in that country (1) ○ if a country is not signed up the images on the website would be unprotected (1) ○ the company does not need to register copyright in every country (1) 		3 Total 12

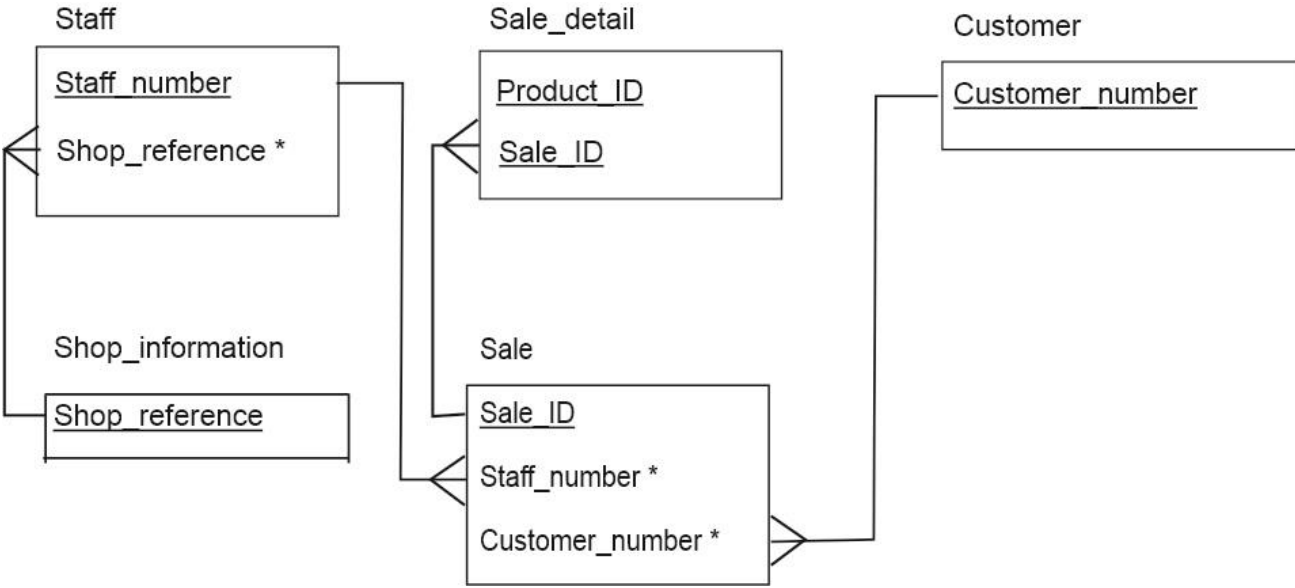
Question number	Indicative content	Additional guidance	Mark
4(a)	<p>Responses should be in relationship to the context of the question. (use of Wi-Fi to make the town 'smart') and make reference to both the town and residents.</p> <p>Transport:</p> <ul style="list-style-type: none"> • Apps / displays for: <ul style="list-style-type: none"> ○ timetables ○ showing when bus will arrive at a location ○ booking seats for long distance ○ finding / paying for parking spaces • Monitor traffic / keep traffic flowing / reduce traffic jams <p>Education:</p> <ul style="list-style-type: none"> • school information e.g. <ul style="list-style-type: none"> ○ attendance ○ reports ○ paying fees / for trips/events ○ notifying absence • library <ul style="list-style-type: none"> ○ access to e-books ○ search for / reserve books / other media • web access for general information <ul style="list-style-type: none"> ○ internet access, possibly filtered / family safe ○ government / town council / official publications / public records <p>Services:</p> <ul style="list-style-type: none"> • medical <ul style="list-style-type: none"> ○ appointments ○ diagnosis ○ health information • shopping <ul style="list-style-type: none"> ○ online ○ search / reserve item for collection ○ booking delivery slot ○ package tracking • communications <ul style="list-style-type: none"> ○ VoIP 		6

	<ul style="list-style-type: none"> ○ email • banking <ul style="list-style-type: none"> ○ online payments / transfers ○ e-statements etc. • e-governance and public participation <ul style="list-style-type: none"> ○ voting / election related ○ petitions ○ communication with representatives / government / town council ○ platform for (political) communication to wider audience <p>Social interaction:</p> <ul style="list-style-type: none"> • forums / social pages / chat • calendars / events 		
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Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-2	<ul style="list-style-type: none"> • Demonstrates limited knowledge and understanding, some of which may be inaccurate. • Applies understanding with limited coherence to produce a superficial and unbalanced discussion.
Level 2	3-4	<ul style="list-style-type: none"> • Demonstrates knowledge and understanding which is mostly relevant but may include some inaccuracies. • Applies understanding to make some coherent connections, leading to a discussion that shows some development, but may be unbalanced.
Level 3	5-6	<ul style="list-style-type: none"> • Demonstrates accurate and relevant knowledge and understanding throughout. • Applies understanding coherently to produce a balanced and fully developed discussion.

Question number	Answer	Additional guidance	Mark
4(b)	<p>Responses should be in relationship to the context of the question. (planning “smart” features for a new town) and involve the use of IT.</p> <p>IT technologies:</p> <ul style="list-style-type: none"> • Sensors • Networks • Models / simulations • Location awareness • CCTV • Virtual reality • Robotics <p>Transport:</p> <ul style="list-style-type: none"> • planning of: <ul style="list-style-type: none"> ○ walking, cycling routes ○ ease of movement about the town <p>Recreation:</p> <ul style="list-style-type: none"> • planning of open spaces • management of events • accessing impact of events <p>Safety and mobility, planning of:</p> <ul style="list-style-type: none"> • traffic management / separation of pedestrians / cyclists from traffic • sensors monitoring environmental factors • facilities for disabled people • intelligent lighting <p>Sustainability / ecology, planning and management of:</p> <ul style="list-style-type: none"> • heat • power • water • waste 		<p>6</p> <p>Total 12</p>

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-2	<ul style="list-style-type: none"> • Demonstrates limited knowledge and understanding, some of which may be inaccurate. • Applies understanding with limited coherence to produce a superficial and unbalanced discussion.
Level 2	3-4	<ul style="list-style-type: none"> • Demonstrates knowledge and understanding which is mostly relevant but may include some inaccuracies. • Applies understanding to make some coherent connections, leading to a discussion that shows some development, but may be unbalanced.
Level 3	5-6	<ul style="list-style-type: none"> • Demonstrates accurate and relevant knowledge and understanding throughout. • Applies understanding coherently to produce a balanced and fully developed discussion.

Question number	Answer	Additional guidance	Mark
5(a)	<p>Award one mark for each of:</p> <ul style="list-style-type: none"> • five entities with the correct names • the four correct relationships (the lines) • correct relationship type between sale and Sale_detail • the three remaining correct relationship types • correct primary key in Sale_detail • the four remaining primary keys • correctly identified foreign keys in Sale • correctly identified foreign keys in Staff or Sale_detail • a fully completed diagram 	Accept logical and consistent abbreviations Any understandable and consistent notation for relationships	9

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-4	<ul style="list-style-type: none"> • Demonstrates limited knowledge and understanding, some of which may be inaccurate. • Applies understanding with limited coherence to produce a response that lacks development. • Demonstrates limited awareness of competing arguments. Conclusion, if present, is generic or unsupported.
Level 2	5-8	<ul style="list-style-type: none"> • Demonstrates knowledge and understanding, which is mostly relevant and may include some inaccuracies. • Applies understanding to make some coherent connections and a partially developed response. • Demonstrates some awareness of competing arguments, but this may be unbalanced, and partially supports conclusion with evidence.
Level 3	9-12	<ul style="list-style-type: none"> • Demonstrates accurate and relevant knowledge and understanding throughout. • Applies understanding coherently to produce a fully developed response. • Demonstrates an awareness of competing arguments and supports conclusion with evidence.

