

INTERNATIONAL ADVANCED LEVEL

INFORMATION TECHNOLOGY

SAMPLE ASSESSMENT MATERIALS

Pearson Edexcel International Advanced Subsidiary in Information Technology (XIT11)

Pearson Edexcel International Advanced Level in Information Technology (YIT11)

First teaching September 2018

First examination from June 2019

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Edexcel, BTEC and LCCI qualifications

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Introduction

The Pearson Edexcel International Advanced Subsidiary in Information Technology and the Pearson Edexcel International Advanced Level in Information Technology are part of a suite of International Advanced Level qualifications offered by Pearson.

These sample assessment materials have been developed to support these qualifications and will be used as the benchmark to develop the assessment students will take.

General marking guidance

- All candidates must receive the same treatment. Examiners must mark the last candidate in exactly the same way as they mark the first.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than be penalised for omissions.
- Examiners should mark according to the mark scheme – not according to their perception of where the grade boundaries may lie.
- 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/indicative content will not be exhaustive. However different examples of responses will be provided at standardisation.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, a senior examiner must be consulted before a mark is given.
- Crossed-out work should be marked **unless** the candidate has replaced it with an alternative response.

Marking guidance for levels based mark

How to award marks

The indicative content provides examples of how students will meet each skill assessed in the question. The levels descriptors and indicative content reflect the relative weighting of each skill within each mark band.

Finding the right level

The first stage is to decide which level the answer should be placed in. To do this, use a 'best-fit' approach, deciding which level most closely describes the quality of the answer. Answers can display characteristics from more than one level, and where this happens markers must use the guidance below and their professional judgement to decide which level is most appropriate.

Placing a mark within a level

After a level has been decided on, the next stage is to decide on the mark within the level. The instructions below tell you how to reward responses within a level. However, where a level has specific guidance about how to place an answer within a level, always follow that guidance. Statements relating to the treatment of students who do not fully meet the requirements of the question are also shown in the indicative content section of each levels based mark scheme. These statements should be considered alongside the levels descriptors.

Write your name here

Surname

Other names

Pearson Edexcel
International
Advanced Level

Centre Number

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Candidate Number

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Information Technology

International Advanced Subsidiary/Advanced Level
Unit 1

Sample assessment material for first teaching
September 2018
Time: 2 hours

Paper Reference

WIT11/01

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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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** A regional educational centre employs teachers to work with local schools. The teachers travel between the schools. They do not have offices in either the schools or the centre. Anika is one of the teachers.
- (a) The teachers still need to work with each other and with the administrative team at the centre.
- (i) Describe **two** ways in which using IT can enable Anika to work effectively.

(4)

- (ii) Explain **one** way in which this working arrangement benefits the regional educational centre.

(2)

- (b) Anika teaches music. She listens to digital recordings of her students' performances. She wants to buy new speakers.

Analogue signals must be converted to digital values before storing on a computer.

- (i) A sound has been recorded with a sample rate of 16 bits/44.1 kHz.

Identify the statement that correctly describes what this means.

(1)

- ☐ **A** The sound wave is broken down into 16-bit chunks. Each chunk is stored as a value between 0 and 44.1.
- ☐ **B** The maximum amplitude of the sound wave is 44100 Hertz. The amplitude is measured in 16-bit segments.
- ☐ **C** The sound wave is measured 44100 times per second. Each measurement is stored in 16 bits.
- ☐ **D** The amplitude of the sound wave is measured 16 times per second. Each measurement is stored as a value between 0 and 44100.

- (ii) The speakers have a frequency response of (+/-3 dB) 60-25,000 Hz.

Identify the statement that correctly describes what this means.

(1)

- ☐ **A** The measure of the variation in volume for each frequency in the given range.
- ☐ **B** The margin of error for each measurement of frequency.
- ☐ **C** The number of times the speaker cones vibrate each second with an accuracy of +/-3.
- ☐ **D** The total number of decibels needed to represent each individual frequency between the top and the bottom end.

- (c) Anika has a small baby. She wants to use a new IT system to monitor the baby's health. The system uses a device inside the baby's dummy (pacifier).



(Source: ©roccomontoya/getty Images)

Figure 1

The dummy (pacifier):

- monitors the baby's temperature and sends an alert if the temperature goes too high
- can be located if lost
- works with a smartphone.

Give **four** ways in which the system could accomplish these tasks.

(4)

(d) Anika is training to run a marathon. She wears a device on her wrist that helps with her training. Here is a drawing of the device.

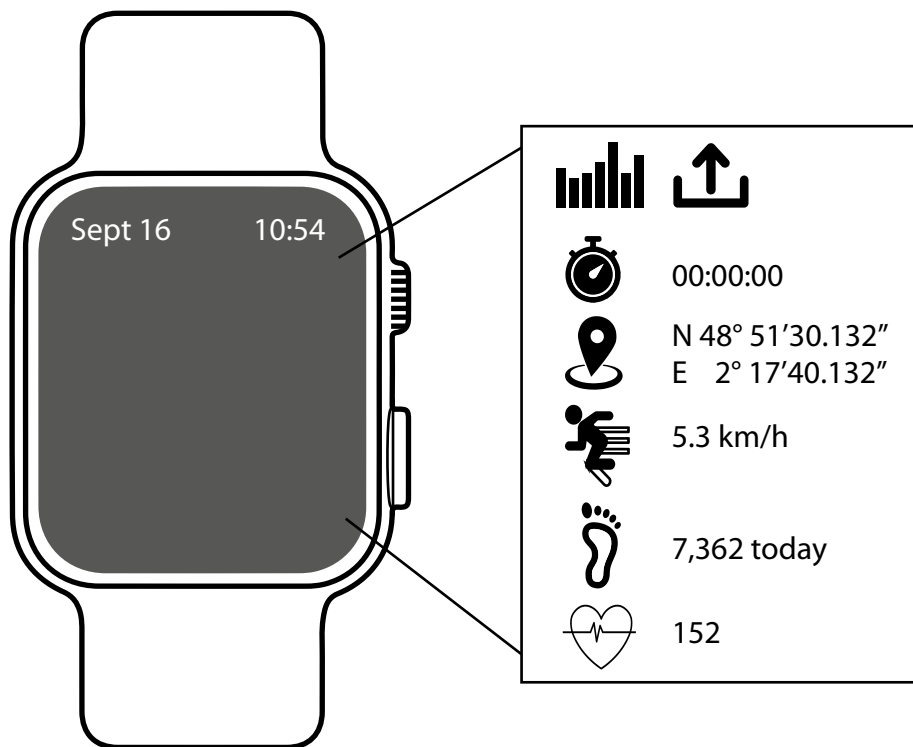


Figure 2

The device demonstrates technological convergence.

Explain **two** benefits of technological convergence in this device.

(4)

(Total for Question 1 = 16 marks)

- 2 An online-only bank needs to store large amounts of data about its customers. Each customer can generate many transactions every day.

- (a) It is said that using cloud storage has financial benefits.

Explain **two** other reasons why the bank should use cloud storage.

(4)

- (b) The online bank uses multi-user software licensing.

Describe how multi-user software licensing works.

(2)

- (c) The bank wants to introduce multi-factor authentication to control access to its computer systems.

Describe **one** way in which multi-factor authentication could be implemented.

(4)

- (d) The bank operates online only.

State **two** factors that prevent some people from using online banking services.

(2)

(Total for Question 2 = 12 marks)

3 A holiday camp for teenagers offers a wide range of activities.

- (a) Campers retrieve their schedules from a file server. The file transfer program operates at Layer 7 (Application) of the OSI 7-Layer Model.

Describe how the file transfer program passes data from the file server to its peer on the user's device.

(3)

- (b) The camp is upgrading its network infrastructure to offer the latest in digital games and network access.

The computers in the games room will be used to play multi-player games. The campers play only against each other. They cannot play with people outside the room as the computers cannot connect to the internet. The games require a very quick network response time.

The computers in the office are used by the administration staff. All of the camp's files are stored centrally on the site. The administration team generates a great deal of network traffic between themselves. The network traffic generated by the administration team must not slow down the rest of the camp's network.

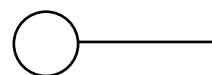
The common room is a separate hut 200 metres away from the main building. Campers can use their own tablets and phones to access the Internet in the common room.

There is a machine room with air conditioning close to the office.

Complete the diagram to show a design for a network infrastructure that will meet these requirements.

(9)

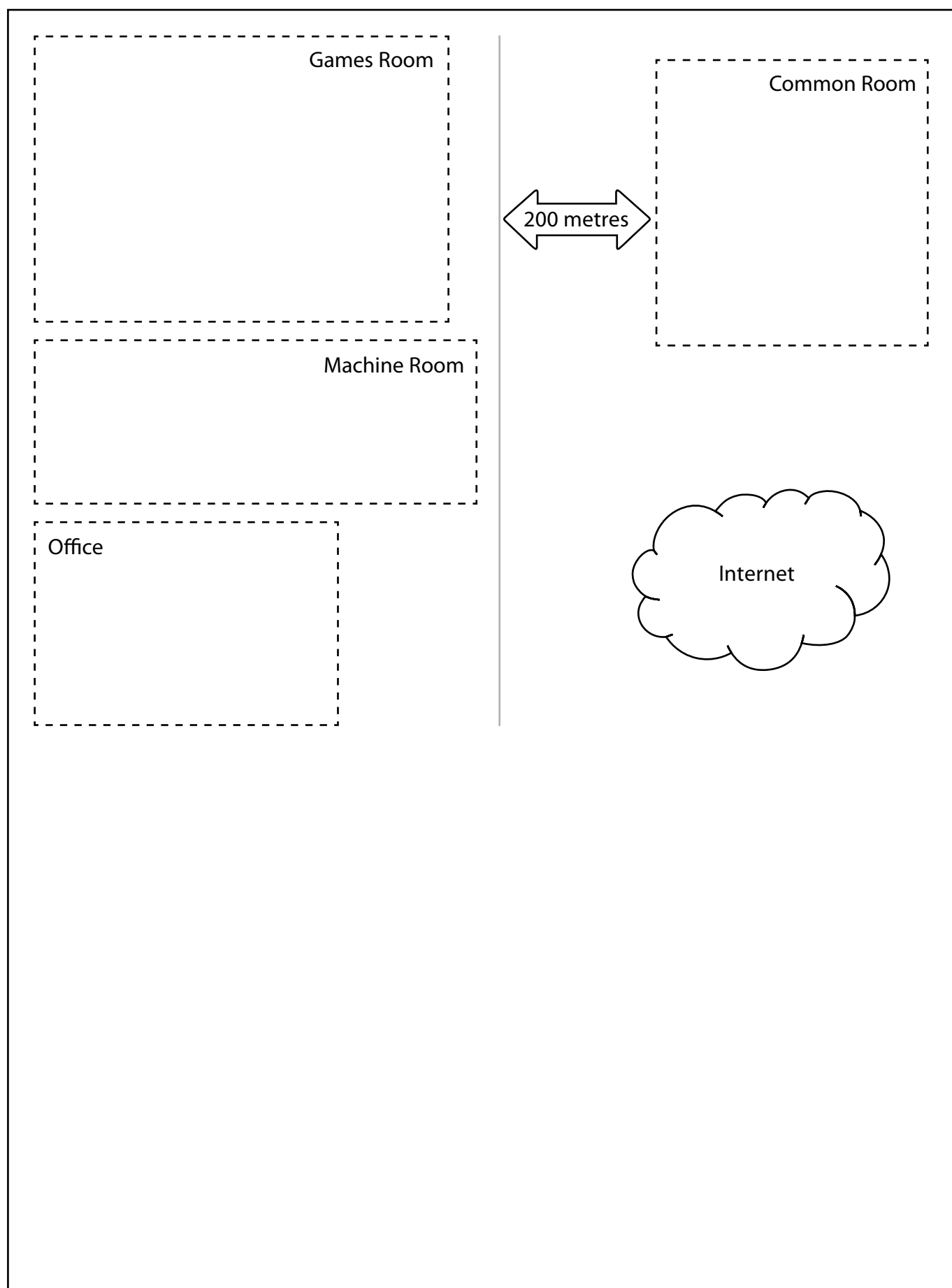
A cable is represented by a line. Use labels to make the design clear. Represent up to 10 machines with this symbol.



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DO NOT WRITE IN THIS AREA



(c) The holiday camp wants an online booking system.

Customers will be able to select arrival and departure dates, choose their accommodation type, enter their address and contact details and register their preferences.

Explain how scripting would be used for the online booking system.

(6)

(Total for Question 3 = 18 marks)

- 4 A hotel uses a relational database to manage room bookings, customer details and housekeeping.

(a) (i) Explain the difference between 'data' and 'information'.

(2)

.....

.....

.....

.....

.....

(ii) Figure 3 shows customer details.

idcustomers	lastname	firstname	creditCardNumber	email
41163	Hartley	Henry	1515151515151	hhartley@somewhere.com
49684	Jones	Joseph	4545454545454	jj@somewhereelse.com
55006	Weidmann	Wendy	7129286127513409125	weidmannw@somewhere.com
93210	Scott	Sarah	6937461968162	sscott@somewhere.com

Figure 3

Give **one** example of data and **one** example of information relating to the customer details.

(2)

Data:

.....

.....

Information:

.....

.....

.....

- (b) The hotel has a housekeeper table, a room table, and a cleaned by table in the database. Example tables are shown.

tbl_housekeeper

idhousekeepers	workinghoursperweek	phone	hourlyrate	lastname	firstname
3842	35	52468975316	10.45	Jones	Joe
6723	20	21928374657	7.50	Wilson	Will
9464	40	12234567890	9.75	Jones	Joan

tbl_room

idcleanedby	room	housekeeper	date
1	312	9464	2016-11-10
3	534	3842	2017-12-11
5	211	6723	2015-10-01
7	101	6723	2017-12-10
9	275	9464	2016-03-11
11	312	6723	2017-12-16
13	534	3842	2017-12-14
15	211	9464	2017-12-10

tbl_cleanedby

idRooms	smoking	maxOccupancy
101	1	2
211	1	2
275	0	6
312	0	4
534	0	2

Figure 4

Write an SQL query that ranks housekeepers by the number of rooms cleaned for the month of December 2017.

(6)

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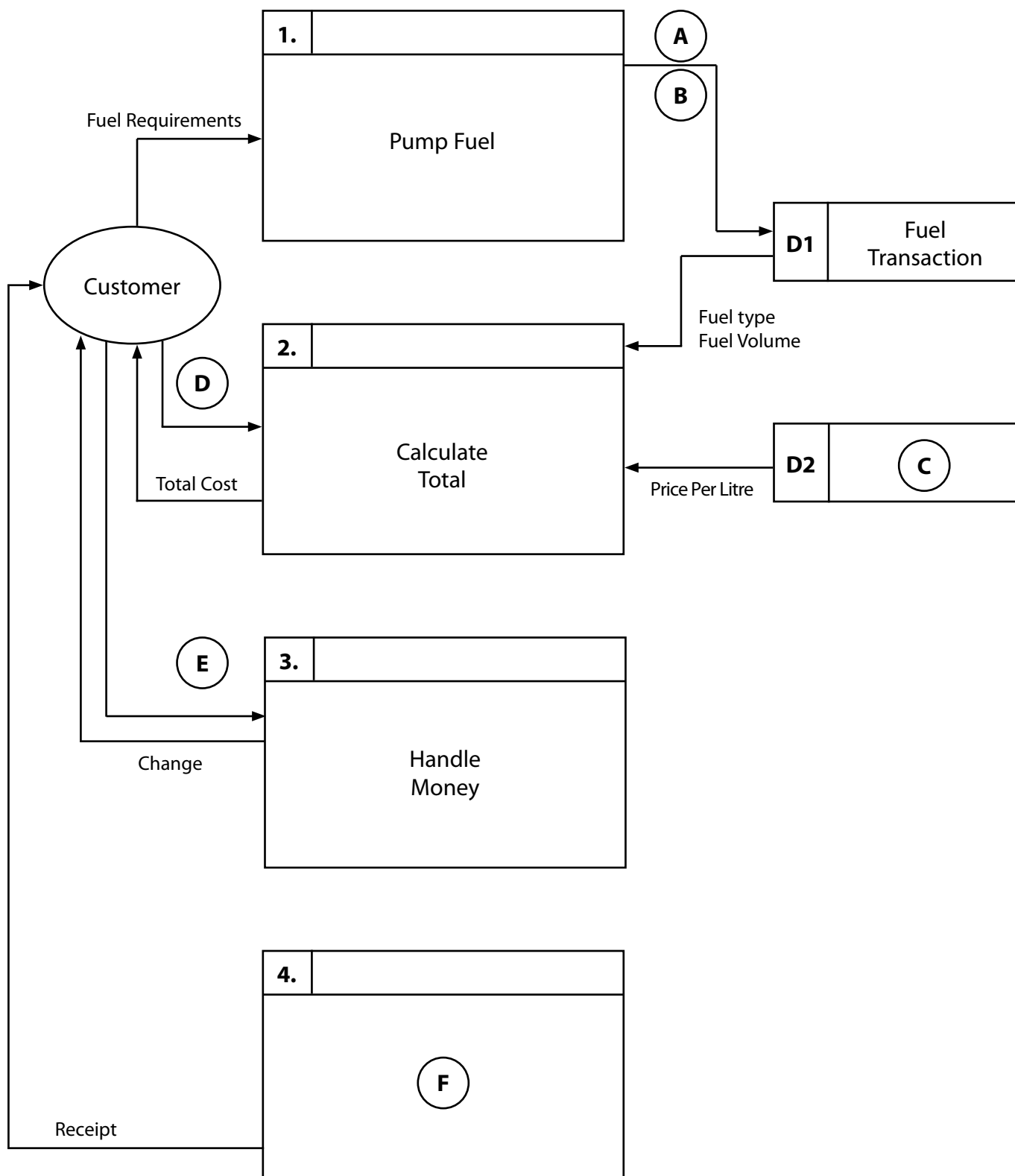
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(Total for Question 4 = 10 marks)

- 5 A service station has four self-service fuel pumps, numbered 1 to 4. Each pump can dispense petrol and diesel fuel. The pumps measure the volume of fuel dispensed in litres. Customers pay for the number of litres shown on the pump display.

(a) Here is a partially complete data flow diagram for purchasing fuel.



Complete the table to show names for the items labelled A–F.

(6)

Label	Name of item
A	
B	
C	
D	
E	
F	

- (b) Sometimes, customers leave without paying for the fuel. In order to stop this, the service station puts a camera and a motion sensor on each of the four pumps. The service station will have a date- and time-stamped photograph of all vehicles using the service station.

Draw a flow chart to describe this process.

(6)

(Total for Question 5 = 12 marks)

- 6 Dylan has found his first job in an IT department. He is deciding whether to join an online community of other IT professionals.

Evaluate the advantages and disadvantages of Dylan joining an online community for IT professionals.

(12)

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(Total for Question 6 = 12 marks)

TOTAL FOR PAPER = 80 MARKS

Unit 1 – Mark scheme

Question number	Answer	Additional guidance	Mark
1(a)(i)	<p>Award one mark for each descriptive point, up to a maximum of two marks for each linked description.</p> <ul style="list-style-type: none"> • Anika could use online applications (1) to allow her to work collaboratively (1). • Anika could use syncing software (1) to keep documents on the server at the education centre synchronised/up to date (1). • Anika could use a mobile phone (1), which could act as a hotspot to access the internet/documents from another device (1). • Anika could use VoIP (1) to speak to/video conference with her colleagues and supervisor (1). • Anika could use publically available Wi-Fi to access the internet (1) to exchange emails (1) with her colleagues. • Anika could use her mobile phone (1) to take messages from colleagues (1) when she is teaching • Anika could use cloud-based solutions (1) for all her resources that she could access from both locations (1), either the schools or centre. 	<p>Any appropriate digital device will suffice.</p> <p>Accept any other appropriate response.</p>	4

Question number	Answer	Mark
1(a)(ii)	<p>Award one mark for an identified benefit and one mark for justification/expansion up to a maximum of two marks.</p> <ul style="list-style-type: none"> • Reduction of overheads (1) because the regional educational centre can reduce the amount of floor space/staff facilities/parking (1) • Expand/can employ more teachers/cover a wider region/ (1) because they are not restrained by physical space/location (1) • Increase in productivity (1) because teachers can work more effectively/share information/support each other when not in the same place/data is in sync (1) 	2

Question number	Answer	Mark
1(b)(i)	C	1

Question number	Answer	Mark
1(b)(ii)	A	1

Question number	Answers	Additional guidance	Mark
1(c)	<p>Award one mark for any of the following up to a maximum of four marks.</p> <ul style="list-style-type: none"> • A temperature sensor inside the pacifier that reads the temperature (1) • A moisture sensor that activates the pacifier (1) • A wireless transmitter in the pacifier sends data/temperature to the smartphone app (1) • A radio frequency identification (RFID) transmitter in the pacifier enables it to be found if lost (1) • An LED light to show when it is on (1). • An LED display to show the temperature (1) • A speaker that sounds if the temperature goes too high (1) • An app automatically sends an alert message if the temperature goes too high (1) 	<p>Accept Bluetooth, WI-FI, GPS as plausible options for location</p> <p>Phone application can be awarded only once for any functionality</p>	4

Question number	Answer	Mark
1(d)	<p>Award one mark for a benefit identified and one mark for justification/expansion up to a maximum of two marks for each response.</p> <ul style="list-style-type: none"> • The user does not have to carry more than one device (1) so is easier to run with (1) • The device collates data on aspects of the runner's performance (1) so that it can all be viewed conveniently in one place (1) • Combined technologies share resources/battery/processor/ (1) so is more efficient/easier to charge up (1) 	4

Question number	Answer	Mark
2(a)	<p>Award one mark for a reason identified and one mark for justification/expansion up to a maximum of two marks for each response.</p> <ul style="list-style-type: none"> • The responsibility for keeping the data safe and available by the host gives an extra level of assurance to the Bank (1) because the host has to implement appropriate disaster recovery procedures and maintenance of service (1) • It provides scalability/expansion (1) because new storage can be bought online (1) • There is no need to train personnel in the specialised technology needed (1) because technical details are taken care of by the host (1) 	4

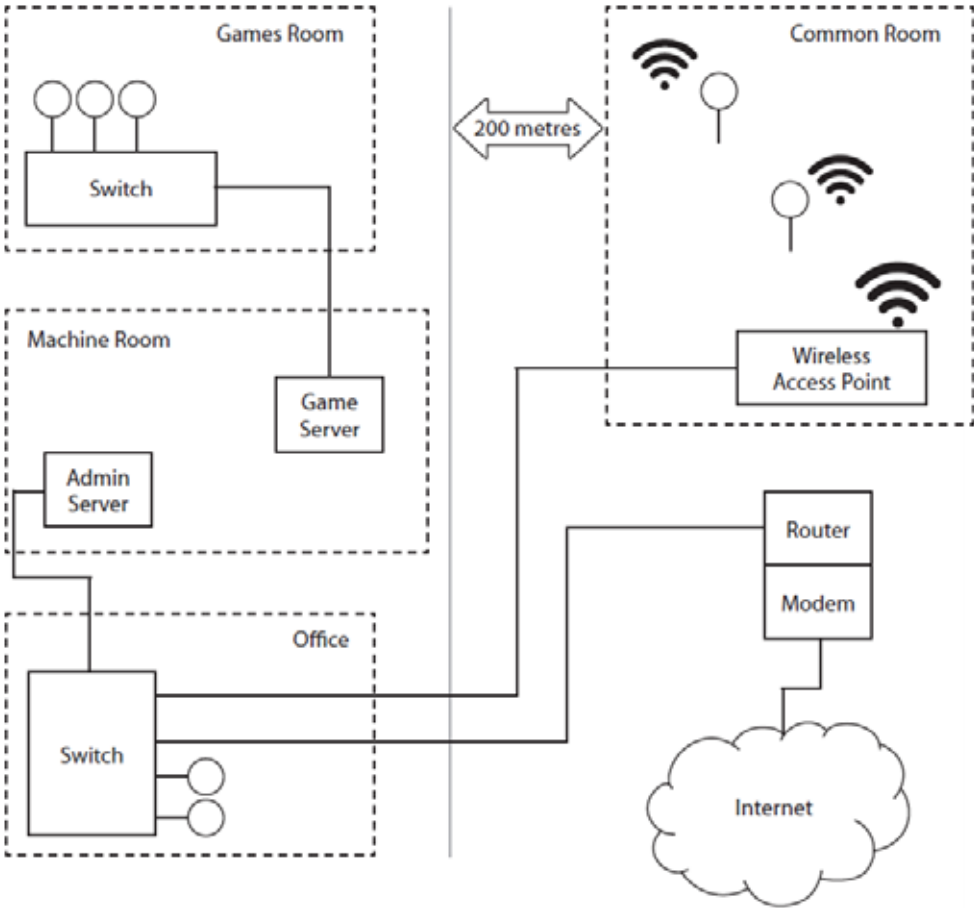
Question number	Answer	Mark
2(b)	<p>Award one mark for each descriptive point up to a maximum of two marks for a linked description.</p> <ul style="list-style-type: none"> • An organisation negotiates a price for the software and a number of seats/unique keys (1). An activation server is visited during the installation process, to assign a seat/unique key to this installation (1). • The number of seats/unique keys for the organisation is fixed (1). Once the fixed number of seats/unique keys is used, no more activations can take place (1). • The number of seats/unique keys for the organisation is fixed (1), but more users are allowed as long as the total number active at one time does not exceed number of seats (1). 	2

Question number	Answer	Additional guidance	Mark
2(c)	<p>Award one mark for each descriptive point, up to a maximum of four marks for a linked description.</p> <ul style="list-style-type: none"> The employee logs onto the system using a username and password combination (1). This is followed by a text message (1) to the employee phone, giving a unique number/PIN (1), which the employee types into the system before being granted access (1) The employee swipes a card (1) into a reader attached to a networked machine (1). The employee is presented with a screen to type in a user name and password (1). If both steps match those on file, then access is granted (1) The employee swipes their finger (1) over a reader attached to a networked machine (1). The employee is presented with a set of security questions (1), like 'name of first pet' that must match those on file before gaining access (1) 	<p>What the user knows (1) such as password, PIN, mother's last name, name of first pet, or other previously registered secret detail.</p> <p>What the user has possession of (1) such as a card, a phone, a dongle, a fob.</p> <p>User characteristics (1) such as a biometric signature, fingerprint, voice print, iris scan, face recognition.</p>	4

Question number	Answer	Mark
2(d)	<p>Award one mark any of the following up to a maximum of two marks.</p> <ul style="list-style-type: none"> Slow access speeds (1) Poor literacy (1) Poor digital skills (1) Physical/mental disabilities (1) Financial barriers (1) Lack of internet access (1) Lack of trust in the service (security scares) (1) 	2

Question number	Answer	Mark
3(a)	<p>Award one mark for each descriptive point, up to a maximum of four marks for a linked description.</p> <p>The sending computer must pass data down through each successive layer of the model until it reaches the bottom/physical layer (1). After travelling across the physical media to the receiver (1), the data must then pass back up through the layers until arriving at the matching layer of the sender (1).</p>	3

Question number	Answer	Mark
3(b)	<p>Award one mark for each device correctly identified on the diagram up to a maximum of nine marks.</p> <p>The diagram shows the functionality – the location of particular devices may vary.</p> <p>Games room A machine performing the role of a server for the game (this can be anywhere in the diagram) (1). The games server is attached to a switch (1). The games room is isolated from the rest of the network/not linked to the main routing device (1).</p> <p>Common room A wireless access point in or near the common room (1).</p> <p>Office A machine performing the role of a server for the admin team (1). A machine is attached to a switch (1).</p> <p>Internet cloud A modem connected to the internet cloud (1). A router connected to the modem (1).</p> <p>Machine room Either the game server or the administration server, or both, goes into the machine room (1).</p> <p>The diagram on the next page is indicative only. Other configurations may be valid and should be rewarded in line with the mark scheme following the diagram.</p>	9

Question number	Answer	Mark
3(b) Cont.	 <p>The diagram illustrates a network setup across three rooms: Games Room, Machine Room, and Office, separated by a vertical line. The Common Room is located 200 metres away from the other rooms.</p> <ul style="list-style-type: none"> Games Room: Contains a Switch connected to three desktop computers. Machine Room: Contains an Admin Server and a Game Server. The Admin Server is connected to a Switch in the Office. Office: Contains a Switch connected to two desktop computers. This switch is connected to the Router/Modem in the Common Room. Common Room: Contains a Wireless Access Point connected to the Router/Modem. It also has three wireless devices (laptops/phones) connected to it. Internet: The Router/Modem is connected to the Internet cloud. 	

Question number	Indicative content	Mark
3(c)	<ul style="list-style-type: none"> • Server-side scripting would be needed to access a bookings database. This means that the server processes the script rather than the client machine. • The server scripts can be written in PHP, ASP, Python • The server script could find the appropriate free dates, put them into a table in a dynamic web page, and send the page back to the client. • Client-side scripting could be used to add dynamic features to the webpage. • Client-side scripting would be needed to validate input, items for the booking, such as telephone number and email address. • Client scripts can be written in JavaScript. They could include a date picker. • Client-side scripting uses the client machine's processing power. This could be used instead of sending every input back to the server to be processed. 	6

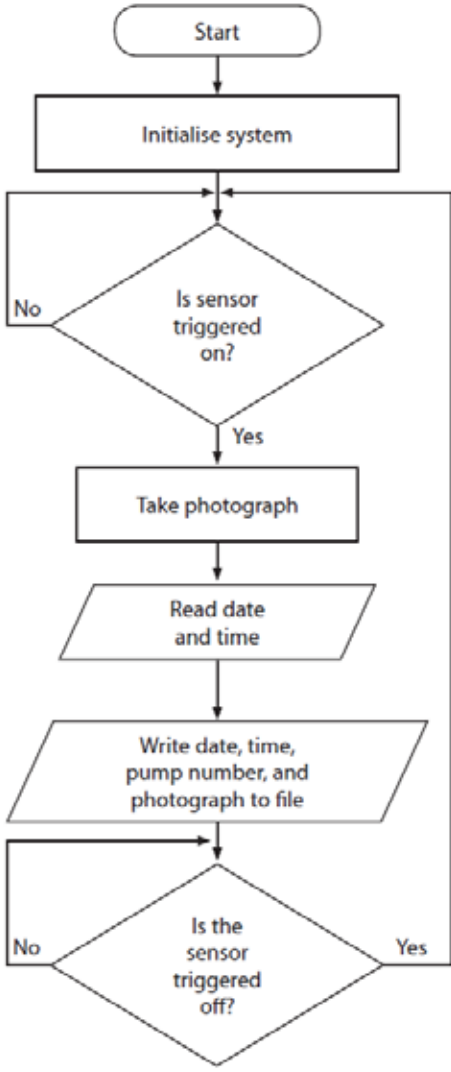
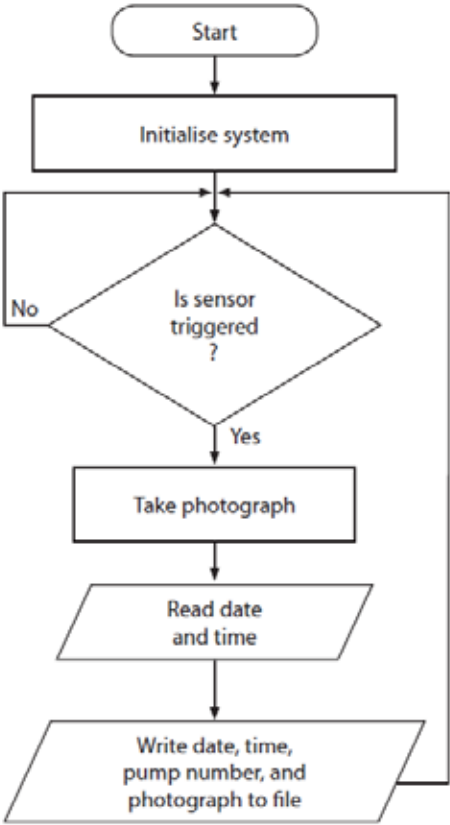
Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–2	<ul style="list-style-type: none"> • Demonstrates limited knowledge and understanding, some of which may be inaccurate. • Applies understanding with limited coherence to produce a response that lacks development.
Level 2	3–4	<ul style="list-style-type: 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.
Level 3	5–6	<ul style="list-style-type: none"> • Demonstrates accurate and relevant knowledge and understanding throughout. • Applies understanding coherently to produce a fully developed response.

Question number	Answer	Mark
4(ai)	<p>Award one mark for a difference identified and one mark for justification/expansion up to a maximum of two marks.</p> <ul style="list-style-type: none"> • Data comes in many forms such as numbers, texts, and dates (1) whereas information is a higher level of abstraction than data (1) • In itself, data has no meaning (1), whereas information implies giving meaning to data (1) 	2

Question number	Answer	Mark
4(aii)	<p>Award one mark for each correctly identified example up to maximum of two marks.</p> <p>Data Any individual data item without the field name/context (1)</p> <p>e.g. 'Jones', '93210'.</p> <p>Information Any individual item of information (1)</p> <p>e.g. the customer's last name is Jones, the customer's ID is 93210.</p>	2

Question number	Answer	Additional guidance	Mark
4(b)	<p>Award one mark for each correct part of the query up to a maximum of six marks.</p> <ul style="list-style-type: none"> • Selecting required fields from the correct tables (1) • Counting the number of occurrences (1) • Identify the matching fields in both tables (inner join) (1) • Grouping by housekeeper (1) • Descending order by count (1) • Use of the month function on the date field (1) <p>Indicative content</p> <pre>select firstname, lastname, count(*) from tbl_cleanedby, tbl_housekeepers where month(date)=12 and idhousekeepers=housekeeper group by housekeeper order by count(*) desc;</pre> <pre>select firstname, lastname, count(*) as numrooms from tbl_cleanedby inner join tbl_housekeepers on idhousekeepers=housekeeper where month(date)=12 group by housekeeper order by numrooms desc;</pre> <pre>select firstname, lastname, count(*) as numrooms from tbl_cleanedby, tbl_housekeepers where month(date)=12 and idhousekeepers=housekeeper group by housekeeper order by numrooms desc;</pre>	Award marks with minor errors in syntax as long as the intent is clear.	6

Question number	Answer	Additional guidance	Mark
5(a)	<p>Award one mark for each correctly named item up to a maximum of six marks.</p> <p>Items A-E must be nouns. Item F must be a verb.</p> <ul style="list-style-type: none"> A. Fuel type (1) B. Fuel volume (1) C. Fuel price (1) D. Pump number (1) E. Cash/money (1) F. Print receipt (1) 	<p>Accept any equivalent word for the same concept.</p> <p>Items A and B could be reversed.</p>	6

Question number	Answer	Mark
5(b)	<p>Award one mark for each correctly identified part of the flowchart up to maximum of four marks.</p> <p>Flow chart includes a function to:</p> <ul style="list-style-type: none"> • reset the sensor (1) • trigger an event and define the loop (1) • capture data – photo, date and time (1) • store data (1). <p>Award one mark for use of correct conventions. (1)</p> <p>Award one mark for a logical and functional process. (1)</p> <p>Other solutions may exist.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;">   </div>	6

Question number	Indicative content	Additional guidance	Mark
6	<p>Responses should be in relationship to the context of the question.</p> <p>Privacy</p> <ul style="list-style-type: none"> • True privacy can be controlled only by the individual user through their settings. • Members may be giving away some rights to privacy (knowingly or unknowingly). • Once information is published in an online community, it is very difficult to get it removed. • Content of exchanges may be analysed to generate profiles to be used for other purposes (monetisation). • Introductions/links can be made between different people in the community, forming networks. • Unsolicited contacts from other members of the community. • Profiles could be cloned and abused. <p>Monetisation opportunities</p> <ul style="list-style-type: none"> • Online community owners may sell membership details stored in database. • Online community owners may data mine membership details to identify targets for promotions. • Online community owners may add advertising to website interface to promote click-through revenue. • Online community owners may sell advertising space on website directly to merchants. • Online community owners may advertise services, some of which may be targeted and helpful. • Members can keep CVs updated online for potential employers to see. <p>Trustworthiness</p> <ul style="list-style-type: none"> • Members may rank the trustworthiness or knowledge of a contributor based on votes from the community. • Popularity might not be a good proxy for accuracy or reliability. • Popularity of contributors might drive other users to the site which could create a more vibrant and supportive community. 	<p>Examples may be used if they're not duplicated and fit one of the categories in the indicative content.</p>	12

Question number	Indicative content	Additional guidance	Mark
6 Cont.	Professional development <ul style="list-style-type: none"> • Contacts in other companies can be made, which may lead to further employment. • Courses and workshops may be offered/advertised, which could be useful for learning. • Other professionals could be called on for help/support/discussion/develop knowledge in new areas. 		

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.

Write your name here

Surname

Other names

Pearson Edexcel
International
Advanced Level

Centre Number

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Candidate Number

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Information Technology

International Advanced Subsidiary/Advanced Level

Unit 2

Sample assessment material for first teaching
September 2018
Time: 3 hours

Paper Reference

WIT12/01

You must have:

The files: Q01b.html, Q02b.html, Q02c.html, Q03b.html,
Q03c.html, Q06b.html; the folder: Q05 and its contents

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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Pearson

SECTION A

You are advised to spend about 60 minutes on this section.

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

- 1 Web pages allow users to access information.
- (a) Figure 1 shows HTML code for a table of contents.

```
18 <h1 id="TOC">Table of Contents</h1>
19
20
21 <a href="#fixqp">Fix the Error - Mark Scheme</a>
22 <a href="#fixms">Fix the Error - Question Paper</a>
23 <a href="#Intro">Introduction</a>
24 <a href="#Literature">Literature Review</a>
25 <a href="#Method">Methodology</a>
26 <a href="#Results">Results</a>
27
28 <h2 id="Intro">Introduction</h2>
29 <p> Some introductory text here.
30 Lorem ipsum dolor sit amet, consectetur adipiscing elit.
31 Maecenas porttitor congue massa.
32 Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo
33 magna eros quis urna. Fusce est.</p>
```

Figure 1

Explain how lines 23 and 28 function together within the HTML code.

(2)

.....

.....

.....

.....

(b) Figure 2 shows how the HTML code for a list of bicycles should be displayed in a browser.

The code should allow for any single item to be identified. For example, A2a is a bicycle suitable for a child under 10 years of age with intermediate skill level.

-
- A. Bicycle
 - 1. Novice
 - a. Child
Suitable for children under 10 years old
 - b. Teen
Suitable for teenagers
 - 2. Intermediate
 - a. Child
Suitable for children under 10 years old
 - b. Teen
Suitable for teenagers
 - 3. Advanced
 - a. Child
Suitable for children under 10 years old
 - b. Teen
Suitable for teenagers

Figure 2

There are two errors in the HTML code which mean that the page does not display as intended.

Open file **Q01b.html** in a browser to identify the errors.

Open the file in your editor.

Amend the code to correct the **two** errors.

Save the amended code as **Q01bFINISHED.html**

(2)

(c) The web page will display an image. Assume that:

- the image file will be in a folder called 'myImages'. The folder 'myImages' is located in the root directory of the website.
- the image file will be called 'coffeecup.png'
- the image must be displayed as 200 pixels by 300 pixels.

Write the HTML code to display this image.

(2)

(d) Explain why it is important to use the 'lang=' attribute on an HTML tag.

(2)

(Total for Question 1 = 8 marks)

2 Browsers use HTML and CSS together to display web pages.

- (a) Figure 3 shows a dropdown menu from a web page. The items on the menu change colour when the mouse hovers over them.



Figure 3

Figure 4 is part of the HTML and CSS for the dropdown menu.

```
19 .dropdown-content {display: none;
20     position: absolute;
21     right: 0;
22     background-color: aquamarine;
23     min-width: 160px;}
24 .dropdown-content a:hover {background-color: pink}
25 </style>
26 </head>
27 <body>
28 <div class="dropdown" style="float:right;">
29     <button class="btndropdown">Flavours</button>
30     <div class="dropdown-content">
31         <a href="#">Vanilla</a>
32         <a href="#">Chocolate</a>
33         <a href="#">Strawberry</a>
34         <a href="#">Mango</a>
35     </div>
36 </div>
37 </body>
38 </html>
```

Figure 4

Describe how the CSS causes the hover effect on the dropdown menu selection.
Include line numbers in your description.

(3)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

- (b) A block of text needs to be centred both horizontally and vertically on the page, regardless of the shape of the page.

Open the **Q02b.html** page in your editor.

There is an error in the CSS code that means it does not centre the text as specified.

Amend the code to correct the error.

Save the amended code as **Q02bFINISHED.html**

(2)

- (c) The web page needs a paragraph to be displayed in a box with rounded corners.

- The font size must be 2.5em.
- The background colour must be hot pink (#FF69B4).
- The radius of the corners must be 10 pixels.

Open the file Q02c.html page in your editor.

Amend the code to complete the definition for #roundbox.

Save the amended code as Q02cFINISHED.html

(3)

(d) Explain how CSS and HTML work together to define a web page.

(2)

.....

.....

.....

.....

(Total for Question 2 = 10 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

3 JavaScript provides interactivity for web pages.

- (a) Describe how JavaScript can be used to determine if an input is a number.

(2)

- (b) Open the **Q03b.html** page in your editor.

There is an error in the JavaScript code that means it does not properly validate email addresses with more than one '@' symbol. For example, it gives the wrong result for the email 'someone@someone@somewhere.com'.

Amend the code to correct the error using a JavaScript iteration or loop.

Save the amended code as Q03bFINISHED.html

(5)

- (c) Some JavaScript code includes an incomplete function to compare two numbers and display the smaller of the two numbers using an alert box.

Open the **Q03c.html** page in your editor.

Amend the code and complete the 'checkNumber' function.

Save the amended code as **Q03cFINISHED.html**

(4)

- (d) The Document Object Model (DOM) is used to access the components on a web page.

Identify the method and property in this line.

`document.getElementById("myField").innerHTML`

(2)

Method:

Property:

(Total for Question 3 = 13 marks)

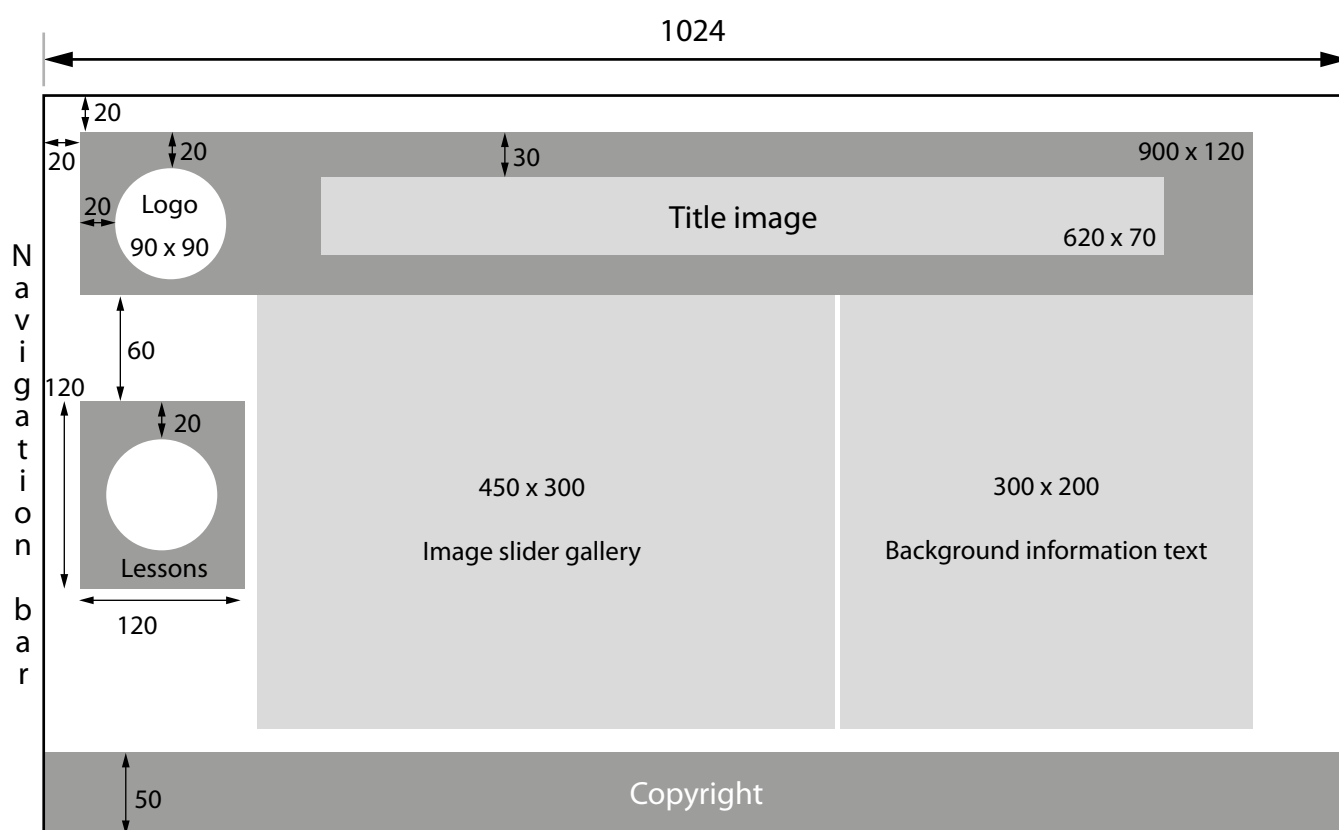
SECTION B

You are advised to spend about 120 minutes on this section.

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

- 4 Topside Skateboarding is a retail outlet dedicated to skateboarding. It wants you to redesign its website. You must develop a sample web page using the wireframe provided below. All numbers are in pixels.

(16)



Overall page requirements

- Add a page title in the HTML.
- Character set must be UTF-8.
- Search engines should find this page if the word 'skateboarding' is entered.
- Use HTML5 elements to define the different parts of the page.
- Use a fixed page layout.
- Include a link to the lessons page.
- Include an image slider to present images of skateboarding activities.
- Include background information text.
- Use an external style sheet that is linked to the HTML page.
- Float all components left.

All required images and information are supplied in the Assets folder.
No additional resources are required.

Component requirements

Header

- Set the background colour to Navy (#000080).
- Position Logo.png and Title.png as shown on the wireframe.

Navigation bar

- Create a graphical link that:
 - is the same size and in the same position as shown on the wireframe
 - has the background colour set to Navy (#000080)
 - includes Logo.png, positioned as shown on the wireframe
 - opens Blankpage.html

Image slider

- Incorporate the image slider into the web page and position it as shown on the wireframe. The code for the image slider can be found in the Assets/ImageSlider folder.
- Add the four images provided to the image slider. The images can be found in the Assets/ImageSlider/Images folder.

Background information

- Import TextBackground.html as an iFrame into the page.
- Size and position the iFrame as shown on the wireframe.
- Use the following font: Arial, Helvetica, sans-serif.
- The text must not have a border.

Footer

- Set the background colour to Navy (#000080).
- Insert the text 'Copyright'.
- Style the text to be White (ffffff) and horizontally centred within the footer.

Using the information provided, create the web page and save as **Q04FINISHED.html**, create the CSS and save as **Q04FINISHED.css**

(Total for Question 4 = 16 marks)

- 5 Topside Skateboarding needs to collect information about its visitors. They need a survey form to pop up when someone visits the site. You need to implement a skeleton so that they can see how it would work.

All required files are supplied in the Q05 folder. No additional resources are required. You only need to add HTML, CSS, and JavaScript to the existing files.

Survey.html page

- Contains the survey questions for the visitors.

Index.html page

- This is the main page.

Add dynamic behaviours

- Survey.html page:
 - add the ability for the user to indicate which tricks they can already do (laser flip, gingersnap, hurricane, bluntslide, rocket air, Texas plant)
 - all items identifying tricks must use the same HTML name attribute. For example, name="tricks"
 - implement a submit button that will activate a function to validate inputs
 - must implement a presence validation on email
 - must implement a length validation on mobile numbers if provided. Mobile numbers must be 11 characters long
 - must implement a type validation on mobile numbers using a Regular Expression. Mobile numbers begin with 0
 - no other validation is necessary
 - create an alert box to display the collected information. Here is an example:

You submitted the following items:
Last Name: Wilson
First Name: Wanda
Mobile: 01234567890
Email: wanda.wilson@somewhere.com
You can do 3 tricks

OK

- Index.html page
 - the modal box should pop up automatically when the page is loaded
 - add a Yes button and a No button to the modal dialog box
 - selecting the No button should close the modal dialog box
 - selecting the Yes button should close the modal dialog box and open the survey web page.

(Total for Question 5 = 24 marks)

DO NOT WRITE IN THIS AREA

Analyse how the HTML does not meet the requirements of the Semantic Web and recommend how to amend it to meet those requirements.

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting or typing. There are no margins, text, or other markings on the page.

TOTAL FOR PAPER = 80 MARKS

Unit 2 – Mark scheme

Question number	Answer	Mark
1(a)	<p>Award one mark for making the link and one mark for justification/expansion up to a maximum of two marks.</p> <ul style="list-style-type: none"> The item on line 28 has been assigned an id (1), which is used as the target destination in line 23 (1). When the word 'introduction' on the page is pressed (1), the browser will reposition the page to show the text around line 28 (1). <p>Accept any other reasonable response.</p>	2

Question number	Answer	Additional guidance	Mark
1(b)	<p>Award one mark for each correction up to a maximum of two marks.</p> <ul style="list-style-type: none"> Change I to A - Line 8: <code><ol type="I"></code> should be <code><ol type="A"></code> (1) Change bullets to letters - Line 66: <code></code> should be <code><ol type="a"></code> and Line 91: <code></code> should be <code></code> (1). 	Line numbers may not match candidate's file if they have inserted or deleted lines.	2

Question number	Answer	Mark
1(c)	<p>Award one mark for identifying the source and one mark for defining the style.</p> <ul style="list-style-type: none"> <code></code> (1). <code><width="200" height="300"></code> (1). <p>Responses may include an 'alt' but it is not required.</p>	2

Question number	Answer	Mark
1(d)	<p>Award one mark mark for identifying the function of the 'lang' attribute and one mark for and extension/justification up to a maximum of two marks.</p> <p>The 'lang=' attribute determines the language of the page (1), so that screen readers can use the most appropriate pronunciation or accent / switch to a different language mode/ so that search engines can return language specific results (1).</p>	2

Question number	Answer	Mark
2(a)	<p>Award one mark for each linked descriptive point up to a maximum of three marks.</p> <ul style="list-style-type: none"> The CSS class for the content (dropdown-content) sets the original colour as aquamarine on line 22 (1). The <a> HTML tag, on line 33, is connected to the CSS a:hover on line 24 (1). When the mouse is hovered over a flavour in the dropdown-content, line 24 is activated, causing the colour to change to pink (1). The original colour of the dropdown content is aquamarine, on line 22 (1). The <a> tag is under the 'dropdown content' class, on line 33 (1). When the mouse is hovered over a flavour, the a:hover on line 24 is picked up, changing the colour to pink (1). <p>Accept any other reasonable response.</p>	3

Question number	Answer	Additional guidance	Mark
2(b)	<p>Award one mark for setting the position to absolute and one mark for adding the transform attribute.</p> <p>The contents of the .mycontainer class need to be changed to:</p> <pre>.mycontainer { position: absolute; (1) top: 50%; left: 50%; transform: translateX(-50%) translateY(-50%); (1) }</pre>	Changes must be made in the CSS (<style> </style>).	2

Question number	Answer	Mark
2(c)	<p>Award one mark for setting the radius, one mark for the colour and one mark for the font size up to a maximum of three marks.</p> <pre>#roundbox { border-radius: 10px; (1) background: HotPink; (1) font-size: 2.5em; (1) }</pre>	3

Question number	Answer	Mark
2(d)	<p>Award one mark for identifying how CSS and HTML work together and one mark for justification/expansion up to a maximum of two marks.</p> <p>HTML is used to define the individual components (1) of the page, such as images and buttons, whereas CSS is used to define how these components are presented (1), such as colours, and sizes.</p> <p>Accept any other appropriate response.</p>	2

Question number	Answer	Additional guidance	Mark
3(a)	<p>Award one mark for identifying a suitable function and one mark for a descriptive point on what the function does up to a maximum of two marks.</p> <ul style="list-style-type: none"> • The isNaN() function can be used to determine if the input is a number (1). • If the input to the function is a number, the function returns false/if the input to the function is not a number, the function returns true (1). 	Do not award a mark for isInteger, as some numbers wouldn't be picked up	2

Question number	Answer	Mark
3(b)	<p>Award one mark for each of the following up to a maximum of five marks.</p> <ul style="list-style-type: none"> • A total counter needs to be declared (1). • Each character in the string must be looked at (for) (1). • Each character must be compared to the @ symbol (1). • An additional test must be provided on the 'if' statement (1). • A functional solution (1). <p>Example</p> <pre> var atCount = 0; (1) var character = ""; for (var i=0; i<emailString.length; i++) { (1) var character = emailString.charAt(i); if (character == '@') { (1) atCount = atCount + 1; } } if ((atCount > 1)) (1) </pre>	5

Question number	Answer	Mark
3(c)	<p>Award one mark for each of the following up to a maximum of two marks.</p> <ul style="list-style-type: none"> • conditional test (1) • appropriate relational operator (1) <p>Award two marks for the following up to a maximum of two marks.</p> <ul style="list-style-type: none"> • the correct output is displayed in an alert box (2) <p>e.g.</p> <pre>if (a <= b) { alert (a); } else { alert (b); }</pre> <p>e.g.</p> <pre>var compareNumbers = (a < b) ? a:b; Alert(compareNumbers);</pre>	4

Question number	Answer	Mark
3(d)	<p>Award one mark for the correct method and one mark for the correct property up to a maximum of two marks.</p> <ul style="list-style-type: none"> • 'getElementById' is the method (1). • 'innerHTML' is the property (1). 	2

Question number	Answer	Mark						
4	Award one mark for each of the following points up to a maximum of ten marks.	16						
	Award up to a maximum of six marks for the adherence to the component layout and the application of CSS using the levels based mark scheme below.							
	<table><tr><td>Evidence found in:</td><td></td><td></td><td></td></tr><tr><td>HTML – Head</td><td><title></title> element used to provide a page title</td><td>1</td><td></td></tr></table>		Evidence found in:				HTML – Head	<title></title> element used to provide a page title
Evidence found in:								
HTML – Head	<title></title> element used to provide a page title	1						

	HTML – Head	<meta charset="UTF-8">	1		
	HTML – Head	<meta name="keywords" content="skateboarding">	1		
	HTML - Body	At least one HTML5 semantic element used to define part of the page: <header> <nav> <section> <article> <footer>	1		
	CSS	The width of the page is set to 1024px.	1		
	HTML – Body	The header includes both Logo.png and Title.png. Award the mark if these are not positioned as shown on wireframe. Do not award the mark if either image is distorted.	1		
	HTML - Body	A functioning internal link is included to Blankpage.html.	1		
	HTML - Body	The image slider is included on the page and all four of the provided images slide. Award the mark if the image slider is not positioned as shown on the wireframe.	1		
	HTML - Body	Text information inserted as an iFrame. Do not award the mark if the iFrame has a border.	1		
	CSS	All page components are floated left.	1		

	0	1	2	3	Mark
Adherence to component layout design	No awardable content	There is little adherence to the component layout design, leading to a solution that is not fit for purpose or is not suitable for the intended audience.	An attempt to adhere to the component layout design leads to a solution that is, in parts, fit for purpose and is, in parts, suitable for the intended audience.	The webpage fully adheres to the component layout design and style requirements. The resulting solution is fit for purpose and is suitable for the intended audience.	3
Application of CSS to control presentation		There is little attempt to make use of the facilities of CSS to control appearance and style. Most components rely on default configuration.	An attempt has been made to use CSS to control the appearance and style of some components. This has been successful in some cases.	Consistent and accurate application of CSS is used throughout to control the appearance and style of all components.	3

Resources

Image	Link
Logo and buttons	http://www.gettyimages.co.uk/detail/illustration/skateboarding-icon-on-flat-color-circle-royalty-free-illustration/640228504
Slider1a	http://www.gettyimages.co.uk/detail/photo/longboarder-turning-hard-high-res-stock-photography/153533667
Slider1b	http://www.gettyimages.co.uk/detail/photo/young-man-doing-tricks-on-skateboard-in-skate-park-royalty-free-image/465893783
Slider2b	http://www.gettyimages.co.uk/detail/photo/skateboarders-high-res-stock-photography/680604831
Slider3b	http://www.gettyimages.co.uk/detail/photo/young-skateboarders-high-res-stock-photography/170952408

Question number	Answer	Mark																																																						
5	<p>Award one mark for each of the following points up to a maximum of 15 marks.</p> <p>Award up to a maximum of nine marks for the Functionality, user interface design, use of notation. using the levels based mark scheme below.</p> <table border="1"> <thead> <tr> <th></th><th></th><th>Marks</th></tr> </thead> <tbody> <tr> <td>Survey.html</td><td>Adding a component for making multiple selections from a set of six options (e.g. checkboxes).</td><td>1</td></tr> <tr> <td></td><td>Six options must belong to the same named group (name="tricks").</td><td>1</td></tr> <tr> <td></td><td>Form has 'onSubmit' to activate JavaScript function.</td><td>1</td></tr> <tr> <td></td><td>Presence check on email implemented.</td><td>1</td></tr> <tr> <td></td><td>Presence check on mobile implemented.</td><td>1</td></tr> <tr> <td></td><td>Mobile length checked, only if mobile is provided.</td><td>1</td></tr> <tr> <td></td><td>Error messages for errors: email blank, mobile wrong length.</td><td>1</td></tr> <tr> <td></td><td>Regular expression validation for mobile number, for example: /^0[0-9]{10}/</td><td>1</td></tr> <tr> <td></td><td>Display contents of one or more text input fields.</td><td>1</td></tr> <tr> <td></td><td>Display total number of tricks (iterating over check box group "tricks").</td><td>1</td></tr> <tr> <td></td><td>Displays text and number in single message box (coercing data types).</td><td>1</td></tr> <tr> <td></td><td></td><td></td></tr> <tr> <td>Index.html</td><td>Modal box displays automatically when page is loaded.</td><td>1</td></tr> <tr> <td></td><td>Two buttons added to modal box (Yes and No).</td><td>1</td></tr> <tr> <td></td><td>Selecting No closes modal box.</td><td>1</td></tr> <tr> <td></td><td>Selecting Yes closes modal box and opens survey.</td><td>1</td></tr> <tr> <td></td><td></td><td></td></tr> </tbody> </table>			Marks	Survey.html	Adding a component for making multiple selections from a set of six options (e.g. checkboxes).	1		Six options must belong to the same named group (name="tricks").	1		Form has 'onSubmit' to activate JavaScript function.	1		Presence check on email implemented.	1		Presence check on mobile implemented.	1		Mobile length checked, only if mobile is provided.	1		Error messages for errors: email blank, mobile wrong length.	1		Regular expression validation for mobile number, for example: /^0[0-9]{10}/	1		Display contents of one or more text input fields.	1		Display total number of tricks (iterating over check box group "tricks").	1		Displays text and number in single message box (coercing data types).	1				Index.html	Modal box displays automatically when page is loaded.	1		Two buttons added to modal box (Yes and No).	1		Selecting No closes modal box.	1		Selecting Yes closes modal box and opens survey.	1				24
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	Selecting Yes closes modal box and opens survey.	1																																																						

Topic area	0	1	2	3	Mark
<p>Appropriate functionality:</p> <ul style="list-style-type: none"> • components and code have been decomposed into appropriate parts • all components are defined in HTML • presentation of components is defined in CSS • dynamic behaviours are implemented in JavaScript. 		<p>The component parts of the program are incorrect or incomplete, providing a program of limited functionality that meets some of the given requirements.</p> <p>Some parts of the logic are clear and mostly appropriate to the problem.</p> <p>The use of typed variables and data structures is limited, with some appropriate use.</p>	<p>The component parts of the program are complete, providing a functional program that meets some of the given requirements.</p> <p>Some parts of the logic are clear and mostly appropriate to the problem.</p> <p>The use of typed variables and data structures is mostly appropriate.</p>	<p>The component parts of the program are complete, providing a functional program that fully meets the given requirements.</p> <p>The logic is clear and appropriate to the problem.</p> <p>The use of typed variables and data structures is appropriate.</p>	3
<p>Appropriate interface design:</p> <ul style="list-style-type: none"> • error messages and other status reports • component layout fit for purpose and suitable for audience. 		<p>The design of the user interface lacks consideration for fitness for purpose and the intended audience.</p>	<p>The design of the user interface is in parts fit for purpose and addresses some of the needs of the intended audience.</p>	<p>The design of the user interface is fully fit for purpose and suitable for the intended audience.</p>	3

Topic area	0	1	2	3	Mark
<p>Appropriate use of notation:</p> <ul style="list-style-type: none"> • Presentation of HTML, CSS and JavaScript ensures clear readability • comments provide clarity. 		<p>Uses programming constructs and techniques to produce some required outcomes in the code.</p> <p>Uses data types that are rarely appropriate to the problem.</p> <p>Limited use of accurate syntax.</p> <p>Limited appropriate use and manipulation of data structures.</p> <p>Some use of meaningful variable names with limited or unhelpful commenting.</p> <p>Parts of the code are clear and readable but much of it makes limited use of appropriate spacing and indentation.</p>	<p>Uses programming constructs and techniques to produce most of required outcomes in the code.</p> <p>Uses data types, some of which are appropriate to the problem.</p> <p>Uses mostly accurate syntax.</p> <p>Accesses and manipulates data structures to produce mostly correct results and/or outcomes.</p> <p>Uses mostly meaningful variable names, with some use of appropriate commenting.</p> <p>Code is mostly clear and readable, making some use of appropriate spacing and indentation.</p>	<p>Accurate programming constructs and techniques are used.</p> <p>Appropriate data types are selected.</p> <p>Accurate syntax is used.</p> <p>Data structures are accessed and manipulated efficiently.</p> <p>Meaningful variable names and comments are used throughout.</p> <p>Code is clear and readable, making effective use of appropriate spacing and indentation.</p>	3

Question number	Indicative content	Mark
6	<p>Semantic Web</p> <ul style="list-style-type: none"> • Web of data that can be processed by machines. • When tags are used appropriately and consistently, algorithms can determine the intentions of the page designer. • Screen readers can make use of these special tags to change language or expressiveness. <p>Requirements</p> <ul style="list-style-type: none"> • HTML5 tags should be used in a standard and meaningful way. • HTML5 tags such as <header>, <footer>, <nav>, and express the designer's intention. • Old-style general-purpose tags, such as <div> relay intention but not structure. • Pre-installed browsers on smartphones support HTML5 tags. <p>Page status</p> <ul style="list-style-type: none"> • This page uses a mixture of old style HTML tags (<div>) and new HTML5 tags (<header>, <section>, <article>). • The <meta> tag, viewport is included which indicates conformity to mobile devices. • This page meets some of the requirements of the Semantic Web. <p>Suggestions</p> <ul style="list-style-type: none"> • Each <div> tag could be replaced by one of the HTML5 tags which is more meaningful. • The <div> on lines 13-17 could be replaced by <nav> which indicates that these components are navigational links. • The <div> on lines 24-26 could be replaced by <section> which indicates that these are at the same level as the other sections. • The <div> on lines 28-30 could be replaced by <footer> which indicates that it is the footer section. • Improve the use of <meta> tag data to include more appropriate keywords for search engines. • Incorporate the use of <alt> tags on images to make the page more accessible by those with disabilities. 	9

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-3	<ul style="list-style-type: none"> Analysis is flawed or superficial, containing simple statements that show limited understanding of the subject matter. Solution may contain some aspects that are appropriate, but is generally ineffective.
Level 2	4-6	<ul style="list-style-type: none"> Analysis is sound, containing minor inaccuracies or omissions, showing some understanding of the given issue. Solution is workable but may have minor issues.
Level 3	7-9	<ul style="list-style-type: none"> Analysis is sound and developed, containing ideas that are linked together in a fluent and logical way, showing a thorough understanding of the given issue. Solution is appropriate and workable.

Write your name here

Surname

Other names

Pearson Edexcel
International
Advanced Level

Centre Number

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Candidate Number

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Information Technology

International Advanced Level

Unit 3

Sample assessment material for first teaching
September 2018
Time: 2 hours

Paper Reference

WIT13/01

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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S 5 9 0 3 5 A 0 1 1 6



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

- 1 An insurance company sells buildings, contents, car, life, travel and pet insurance.
- (a) The company makes extensive use of IT.
- (i) Give two reasons why input validation should be implemented on databases and IT systems.

(2)

- (ii) Figure 1 shows part of an insurance application form.

Insurance Application

Buildings ☐ Contents ☐ Car ☐ Life ☐ Travel ☒ Pet ☐

Name*: Mr Kirk Martin Email*: K.Martin@somewhere.com

Address: 37 Tulip Road Mobile*:

0	1	2	3	4	5	6	7	8	9	0
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Danville

23910-448

Start Date: 20/03/2017

Duration (3 to 12 months): 6

*Information must be provided

Figure 1

The data in Figure 1 will be input into a database.

Complete the table with an example of a validation rule for each type of validation. The first row of the table has been completed.

(4)

Type of validation	Validation rule
Type check	Start date must be of type date
Length check	
Range check	
Lookup check	
Presence check	

- (b) The insurance company plans to use a customer relationship management (CRM) system to interact with its customers.

Explain how it could use a CRM system to improve its business.

(6)

(Total for Question 1 = 12 marks)

2 A car manufacturer has factories in several different countries.

- (a) The head office is in London. The factory in Colombo sends sensitive data to the head office using asymmetric (public key) encryption.

Describe the process of asymmetric encryption for data sent from Colombo to London.

(4)

- (b) The factory in Colombo has been operating since 2010 and collects a terabyte of new data each month. This data is stored on several networked servers.

- (i) The factory is currently using 92% of its local file storage capacity. For legal reasons, some of the data cannot be permanently destroyed.

Explain the impact of archiving the data.

(2)

- (ii) The factory needs a disaster recovery plan for its IT systems.

Describe one way in which the factory could prepare for a disaster that destroys the hardware and software IT systems in its main building.

(2)

(Total for Question 2 = 8 marks)

- 3** A city is using the latest technologies to ensure a safer working environment for its employees and reduce the amount of pollution caused by motorists looking for car parking spaces.

- (a) The city has an extensive training programme for its emergency response teams. The city is considering using virtual reality in its training programme.

Discuss the advantages and disadvantages of using virtual reality in the training programme.

(6)

- (b) The city has several multi-storey car parks. Each car park has many parking bays. Drivers, with smartphones, planning trips to the city are alerted to the location of car parks with free bays from an app. This information is relayed in real time and continuously updated. As the driver approaches the car park, the location of all the free bays in the area is relayed. When a driver takes a bay, it becomes occupied. When a driver leaves a bay, it becomes free. This information is monitored and processed at city central. The city tracks all the information about parking activities.

Draw an information flow diagram to show how this parking management system could be implemented using the Internet of Things.

Assume the driver is using the app in a safe, legal way.

(12)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 3 = 18 marks)

- 4 A local youth group is creating a gaming room for playing a popular multi-user adventure game. The room will have a server and twelve client workstations. There is a fixed budget.

An experienced project manager is in charge of the overall project. She has decided that an agile approach will be used.

There are four tasks which need to be completed in six weeks:

- designing the room layout
- calculating electrical and network cabling costs
- installing network cabling
- installing benches for server and client workstations.

A team is assigned to each task.

Three elements of an agile approach are incremental release, detailed planning and verbal communication.

- (a) Explain how an agile approach could be used when carrying out the four tasks.

(6)

DO NOT WRITE IN THIS AREA

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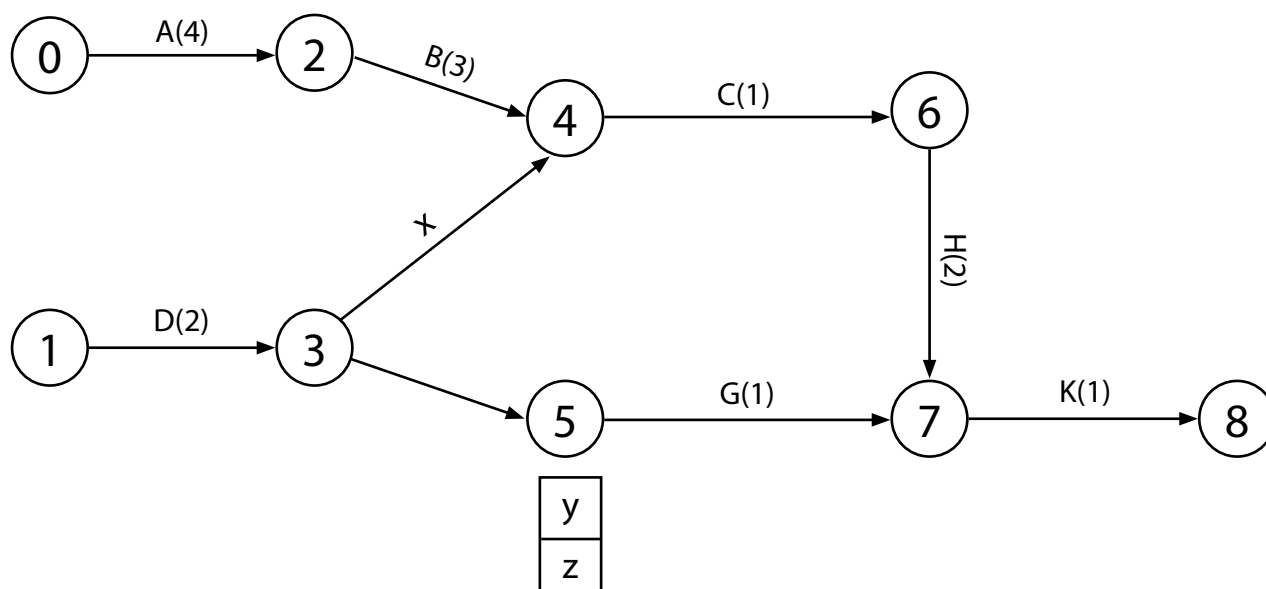
DO NOT WRITE IN THIS AREA

- (b) The installation of the server, the twelve client workstations and all the software is planned using precedence tables and a project network diagram. The critical path needs to be identified.

Here is the precedence table for this part of the project.

Activity	Description	Duration	Predecessor
A	Set up clients	4	-
B	Test clients	3	A
C	Connect to network	1	B, E
D	Set up server	2	-
E	Test server	1	D
F	Install game on server	1	D
G	Configure game on server	1	F
H	Test all communications	2	C
K	Clients test game	1	H, G

Here is a partially complete activity on an arc network diagram representing the precedence table.



(i) Give the values for x, y, and z.

(3)

x

y

z

(ii) State the nodes in the critical path.

(1)

.....

.....

(Total for Question 4 = 10 marks)

5 A family-run cheese business is looking to modernise.

- (a) It is introducing new delivery vans to cover a wider geographical area.
By using digital devices and software, the vans and drivers can be in constant communication.

The project manager uses SMART criteria to write project objectives.
This is one of the project's objectives:

"Deliver 90% of the cheese within one hour of the delivery window over a period of one month, using a maximum of eight vehicles and drivers."

Complete the table to show how this objective fits the SMART criteria.
One row has been completed for you.

(4)

Objective	
Deliver 90% of the cheese within one hour of the delivery window over a period of one month, using a maximum of eight vehicles and drivers.	
Criteria	How the objective meets the criteria
S	The objective is specific and well defined. It is clearly applicable to the delivery of cheese.
M	
A	
R	
T	

- (b) As part of the expansion, the business has commissioned new control software for its four cheese-making facilities. The new software was installed overnight on August 10th at all four locations. During the morning of August 11th, all of the milking and processing machines exhibited unrecoverable errors. The entire day's milk and cheese production, at all four locations, was ruined.

Discuss the appropriateness of alternative software changeover methods for the cheese business.

(6)

(Total for Question 5 = 10 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

- 6** A water company has millions of residential and commercial customers. All customers have smart meters that track water consumption every 60 seconds. The smart meter transmits the consumption information back to the water company once a day.

The performance of the water pumps is monitored constantly. The information collected includes the volume of water pumped every minute, the power consumption and the intensity of the vibrations caused by each pump.

Information from automated testing facilities is constantly monitored to ensure the highest levels of water quality.

The water company also runs IT systems for accounting, billing, and employees.

The water company recognises that it is dealing with Big Data.

Evaluate the advantages and disadvantages for the water company of collecting and using big data.

(12)

This image shows a full page of a document template designed for handwriting practice. It consists of ten sets of horizontal dashed lines spaced evenly down the page. Each set of lines provides a guide for letter height and placement. The background is plain white, and there are no margins or additional markings present.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 6 = 12 marks)

DO NOT WRITE IN THIS AREA

- Use single line, parenthetical notation. Do not draw a diagram.

[illegible]

TOTAL FOR PAPER = 80 MARKS

Unit 3 – Mark scheme

Question number	Answer	Additional guidance	Mark
1(a)(i)	<p>Award one mark each for any of the following up to a maximum of two marks.</p> <ul style="list-style-type: none"> To ensure data is fit to be processed/in the correct format (1) To ensure input errors are identified (1) To ensure that any information extracted is reliable (1) <p>Accept any other appropriate response.</p>	Do not award 'correct' in relation to the data itself.	2

Question number	Answer			Additional guidance	Mark
1(a)(ii)	Award one mark for each correctly completed cell in the table up to a maximum of four marks.			Accept either description words or implementation detail.	4
	Validation type	Validation rule			
	Length check	The mobile number must be 11 digits long/ len (mobile_number) = 11.	(1)		
	Range check	Duration must be a minimum of 3 to a maximum of 12/3 >= policy term <= 12.	(1)		
	Lookup check	Type of insurance: buildings, contents, car, life, travel, pet insurance.	(1)		
	Presence check	Name/email/mobile cannot be blank.	(1)		

Question number	Indicative content	Mark
1(b)	<p>Candidates are not required to have working knowledge of the insurance industry but should apply their knowledge of CRM systems to the information provided in the scenario.</p> <ul style="list-style-type: none"> • Manage communication with customers to improve customer service (returning calls after complaints). • Upsell insurance products (all customers with car policies could be target marketed for a travel insurance promotion). • Customer retention (all customers whose household policies were up for renewal next month could be sent an offer of a price reduction, a free month, or a gift). • Identify overall sentiment about their customer service department (after each call with a customer service representative, the customer could be sent an email survey. The responses could be analysed to identify new customer services or ways to improve existing ones). • Identify buying trends (e.g. those over the age of 65 and living alone may be more likely to purchase pet insurance). • Synchronise marketing events (to ensure customers are not sent too much marketing material). 	6

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 response that lacks development.
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 and a partially developed response.
Level 3	5–6	<ul style="list-style-type: none"> • Demonstrates accurate and relevant knowledge and understanding throughout. • Applies understanding coherently to produce a fully developed response.

Question number	Answer	Mark
2(a)	<p>Award one mark for each linked descriptive point up to a maximum of four marks.</p> <p>The Colombo factory encrypts the data (before sending to London) (1) using the public key (1). The London office will decrypt the data it receives (1) using the private key (1).</p>	4

Question number	Answer	Mark
2(b)(i)	<p>Award one mark for identifying the impact and one mark for justification/expansion up to a maximum of two marks.</p> <ul style="list-style-type: none"> • There will be greater free space on live storage (1) because the historical data has been moved to a different storage medium (1). • There will be delays accessing the historical/archived data (1) because it will have been moved to a slower storage medium (1). • The archiving requires additional storage media (1), which will incur financial costs/occupy physical space (1). 	2

Question number	Answer	Additional guidance	Mark
2(b)(ii)	<p>Award one mark for each linked descriptive point up to a maximum of two marks.</p> <ul style="list-style-type: none"> • A warm/parallel system/site, with appropriate hardware already installed and ready, could be maintained (1), which could be brought online with restored data (1) • A hot/mirrored system/site, with appropriate hardware already installed and ready, could be maintained (1) which could be brought online immediately (1) • A planned fund could be established for hardware/software to be purchased (1) so that a replica of the system can be created quickly (1). 	Do not accept responses indicating only backing up of data.	2

Question number	Indicative content	Mark
3(a)	<p>Advantages in context:</p> <ul style="list-style-type: none"> • could save lives caused by accidents • could save time by having practised exact procedures • could save harm to the environment by understanding how to handle chemical spills • system could be reused to train additional teams of emergency responders • emergency personnel could be better trained by experiencing unique situations challenging to reproduce in real life. <p>Disadvantages in context:</p> <ul style="list-style-type: none"> • might be expensive if the procedure was a one-off, not to be repeated • would be expensive/costly to buy the best/high-end virtual reality hands-free kit • would not simulate the full experience of being in a dangerous situation because of smells or touch • the emergency response personnel could experience bad side-effects such as dizziness or nausea during the training. 	6

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	Mark
3(b)	<p>Award one mark for each correctly drawn part of the information flow diagram up to a maximum of twelve marks.</p> <ul style="list-style-type: none"> • identification of a smartphone app • identification of GPS • input to smartphone input of GPS location • identification of driver • parking information (car park, free spaces) sent to driver • multiple bays in a car park • light/pressure sensor collecting bay status • aggregator/monitor collecting status of all bays in a single car park • car park monitor sends information to city central • car park monitor sends car park ID and number of free spaces • telecoms sends parking information to parking processing • parking processing sends parking information to record keeping • parking processing sends accumulated information back to telecoms • telecoms sends accumulated data to smartphone app • fully functional solution that could work <p>Marks can also be awarded for any additional functionality, such as payments, indicated on the diagram.</p>	12

Question number	Answer	Mark
3(b) Cont.	<pre> graph TD GPS[GPS] -- Location --> App[Smartphone Parking App] App -- "Car park ID Number free space (Near location)" --> Driver[Driver] App -- "All car park IDs Number free at each park Timestamp" --> Telecoms[Telecoms] Telecoms -- "Car park ID Number free Timestamp" --> PP[Parking Processing] PP -- "Car park ID Number free Timestamp" --> RK[Record Keeping] Telecoms -- "Car park ID Number free Timestamp" --> SM[Status Monitor Car Park AA] LG12[Light Gate Parking Bay 12] -.- LG36[Light Gate Parking Bay 36] LG12 -- "Bay number Status" --> SM LG36 -- "Bay number Status" --> SM SM -- "Car park ID Number free Timestamp" --> PP </pre>	

Question number	Indicative content	Mark
4(a)	<p>For each characteristic</p> <p>Incremental release</p> <ul style="list-style-type: none"> • The design team could create a design as quickly as possible. • They could then have the users of the room give feedback on the design. • They could then amend the design and show it to the users again. • This process could iterate several times until the design is correct and/or the timeframe is exhausted. <p>Detailed planning by each team</p> <ul style="list-style-type: none"> • The team calculating the cabling costs could plan two sprints. • They could deliver the costs for the electrical cabling in the first sprint and the costs for the network cabling in the second sprint. • The team could further break down the calculation task into subtasks such as measuring up, calling vendors, and making spreadsheets. <p>Verbal communications</p> <ul style="list-style-type: none"> • Face-to-face communications is the preferred method in agile developments. • Each day or two, the entire team will meet for a very short time (scrum), perhaps only 10 minutes, to discuss what has been accomplished and what is left to do. • These meeting may take place in larger groups of several teams and could include the users of the games room (stakeholders) as well. • The two teams installing the cabling and the benches could meet to avoid working in the same part of the room at the same time. 	6

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 response that lacks development.
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 and a partially developed response.

Level	Mark	Descriptor
Level 3	5-6	<ul style="list-style-type: none"> Demonstrates accurate and relevant knowledge and understanding throughout. Applies understanding coherently to produce a fully developed response.

Question number	Answer	Additional guidance	Mark
4(b)(i)	<p>Award one mark for each correct value up to a maximum of three marks.</p> <ul style="list-style-type: none"> $x = E(1)$ $y = 3$ $z = 9$. 	E must include duration.	3

Question number	Answer	Mark
4(b)(ii)	<p>Award one mark for:</p> <p>A, B, C, H, K</p> <pre> graph LR A((0)) -- A(4) --> B((2)) B -- B(3) --> C((4)) C -- C(1) --> H((6)) H -- H(2) --> K((7)) K -- K(1) --> 8((8)) D((1)) -- D(2) --> E((3)) E -- E(1) --> F((5)) F -- F(1) --> G((7)) G -- G(1) --> 10((10)) 10 --> 11((11)) </pre>	1

Question number	Answer	Mark												
5(a)	<p>Award one mark for each correctly completed cell in the table up to a maximum of four marks.</p> <table><tr><th>Criteria</th><th>How the objective meets the criteria</th></tr><tr><td>S</td><td>The objective is specific, clearly defined and precise. It is clearly applicable to the delivery of cheese (1).</td></tr><tr><td>M</td><td>Delivery times can be easily monitored so are measurable (1).</td></tr><tr><td>A</td><td>Provided that cheeses, vehicles, and drivers are available, the objective is achievable (1).</td></tr><tr><td>R</td><td>Reliable delivery is relevant in maintaining good customer relationships (1).</td></tr><tr><td>T</td><td>Time-bound to one month (1).</td></tr></table>	Criteria	How the objective meets the criteria	S	The objective is specific, clearly defined and precise. It is clearly applicable to the delivery of cheese (1).	M	Delivery times can be easily monitored so are measurable (1).	A	Provided that cheeses, vehicles, and drivers are available, the objective is achievable (1).	R	Reliable delivery is relevant in maintaining good customer relationships (1).	T	Time-bound to one month (1).	4
Criteria	How the objective meets the criteria													
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A	Provided that cheeses, vehicles, and drivers are available, the objective is achievable (1).													
R	Reliable delivery is relevant in maintaining good customer relationships (1).													
T	Time-bound to one month (1).													

Question number	Indicative content	Mark
5(b)	<ul style="list-style-type: none"> • A direct changeover is where the whole new system is installed into all the business at one time and the old system is removed. • A direct changeover of the control software caused the whole day's production to be lost. • A pilot changeover is where the new system is put into operation at a single location and tested to see if it works. • A pilot changeover would mean that only one cheese-making location would have failed on August 11th. • A phased changeover is where only part of the new system is installed at a time. • A phased changeover could work in the cheese factory if the cheese-making process was changed on one day, in one location, and the milking process changed on another day. • A parallel changeover is where both the old and the new systems run at the same time. • A parallel changeover would not work because the hardware cannot be controlled by two different software programs at the same time. 	6

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	Mark	Descriptor
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.

Question number	Indicative content	Mark
6	<p>(A) = advantage, (D) = disadvantage</p> <p>Volume</p> <ul style="list-style-type: none"> • (D) The water company will need to consider the merits of different available storage methods (local, cloud) • (D) It will need to develop policies for monitoring and archiving the large volumes of data • (A) The large volume of data will support confidence in the analysis results (statistical significance) • (A) The large volume of historical data will provide a good foundation for business decisions (where to put new pumping stations) <p>Veracity</p> <ul style="list-style-type: none"> • (A) If the quality of the water drops on one of the pumps then action can be taken immediately to shut down the pump to ensure no ill effect on the consumer • (D) Errors in employee records could lead to the water company failing to comply with legislation, such as taxation and reporting • (D) The water company will have to consider methods for ensuring that data is reliable and trustworthy • (A) Being able to trust the data could allow the water company to identify faults in the system confidently <p>Velocity</p> <ul style="list-style-type: none"> • (D) The water company will have to consider if it has the processing capacity (machines, software) available to handle the speed at which the data arrives. • (D) Data arriving very quickly may mean having to purchase/procure/construct new machines/software/processes that are capable of working more quickly • (A) By having data arrive quickly, the water company can respond immediately to system faults (redirect water, shut down pumps). 	12

Question number	Indicative content	Mark
6 Cont.	<p>Variety</p> <ul style="list-style-type: none"> • (D) Readings from sensors will need to be processed in a different way to the readings from the smart meters. • (D) The customer data will need to be processed in a different way to the employee data • (A) The different varieties of data could be shared with other organisations (achieve common goals, monetary gain). <p>Analysis</p> <ul style="list-style-type: none"> • (A) The collected data could be analysed to derive insights (customer fraud, seasonal patterns in usage, patterns in pump breakdowns). • (A) The collected data could be analysed to provide a more customised service (water quality tests/pump efficiencies could be reported to consumers based on local area). <p>Security</p> <ul style="list-style-type: none"> • (D) By placing a smart meter in their customers' homes, the water company needs to consider the security of the device • (D) The smart meter must be secured to a level which protects the device from being accessed by an unauthorised person. 	

Level	Mark	Descriptor
	0	No rewardable content.
Level 1	1–4	<p>Basic, independent points are made showing elements of knowledge and understanding of key facts/concepts/principles/issues of information technology.</p> <p>The discussion will contain basic information with little linkage between points made.</p>
Level 2	5–8	<p>Demonstrates adequate knowledge and understanding of key facts/concepts/principles/issues of information technology.</p> <p>The discussion shows some linkages and lines of reasoning with some structure.</p>

Level	Mark	Descriptor
Level 3	9-12	<p>Demonstrates comprehensive knowledge and understanding by selecting relevant knowledge and understanding of key facts/concepts/principles/issues of information technology to support the discussion being presented.</p> <p>The discussion shows a well-developed, sustained line of reasoning which is clear, coherent and logically structured.</p>

Question number	Answer	Additional guidance	Mark
7	<p>Award a maximum of ten marks for presenting a viable solution.</p> <ul style="list-style-type: none"> • Two tables identified by suitable names (1) for a maximum of (2). • Primary keys identified for two tables (1) for a maximum of (2). • Foreign keys identified (1) for a maximum of (3). • Additional fields provided in correct tables (1). • A functional solution demonstrating efficiency in terms of reducing data redundancy and reducing unnecessary storage requirements (1). • Use of notation across all tables (1). <p>CYCLIST_TABLE (<u>cyclistID</u>, cyclistLastName, cyclistFirstName, ...) BICYCLES_TABLE (<u>bicycleID</u>, bicycleLockCode, bicycleLocation, bicycleMaker, ...) SERVICE_TABLE (<u>serviceID</u>, bicycleID*, serviceDate, servicePerson, ...) BOOKING_TABLE (<u>bookingID</u>, cyclistID*, bicycleID*, bookingDate, bookingPrice, ...)</p>	<p>A solution using more tables and keys may be correct, but the maximum marks awardable are based on the simplest solution.</p> <p>Compound keys are awardable, if used correctly.</p> <p>Functionality needs to consider removing duplicated data across tables and removing unnecessary fields.</p>	10

Pearson Edexcel

International Advanced Level

Information Technology

International Advanced Level

Unit 4

Sample assessment material for first teaching
September 2018
Time: 3 hours

Paper Reference
WIT14/01

You must have:

The files Inevtory.accdb, Loans.xlsx and Candidate evidence template.docx

Instructions

- Use **black** ink or ball-point pen.
- Answer **all** questions.
- Answer the questions in the spaces provided on the Candidate evidence template
– *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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Scenario

Haroon works for a training company. The company provides training for small businesses around the country. The staff divide their time between working in the company's main office and visiting clients to deliver training.

When working in the office, the staff use desktop computers. The company has equipment, such as laptops and projectors, which staff can book out when needed. They can borrow equipment for between one and 14 whole days.

Haroon keeps a list of equipment in a single table within the database 'inventory'.

Haroon uses the 'loans' spreadsheet to keep a record of who has borrowed equipment.

Haroon is finding it increasingly difficult to keep track of equipment and wants a solution that will allow him to manage the equipment effectively and reduce the number of errors in record-keeping.

The Inventory database and Loans spreadsheet are provided in your examination area. Study these files carefully.

The file 'candidate evidence template' is provided in your examination area. The screenprints you produce for each question should be copied into the appropriate places in the table in this template.

Responses to extended responses should be typed in the appropriate location in the 'candidate evidence template' document.

1 (a) The Equipment table needs to be improved.

(i) There is an error in the use of datatypes in this table.

Identify and correct this error.

(1)

(ii) Set up a data entry list on the field Category. You can assume that the database contains examples of all possible categories and data entry should be restricted to these only.

Screen-print the table in **Design** view, making sure the new data type and contents of the dropdown list can be clearly seen.

(3)

(b) Haroon needs to enter data about new equipment.

Create a data entry form for the **Equipment** table that will allow Haroon to add new records to the database.

The form must:

- enter new records only
- allow data entry of relevant equipment details
- allow the user to select a category for each new entry
- set 'Last Safety Test' date to today's date by default
- provide a button to submit/save the entered data to the table.

Screenprint your form in **Form** view.

Produce screenprints in DESIGN view to show any macros, code, queries and/or properties you have used. Ensure that all fields and details can be clearly seen.

(6)

- (c) Haroon currently uses the Loans spreadsheet to keep a record of who has borrowed equipment. He wants to extend the inventory database so that it can be used for this purpose.

Develop the inventory database to add this functionality. You must create an efficient data structure that minimises data duplication, uses correct data types and primary keys, and enforces referential integrity.

Produce screen prints that clearly show relationships, table names, field names, data types and primary keys.

(9)

- (d) Haroon wants to ensure that the data in the database is valid.

Apply validation to the data in the tables you have created.

You can assume that, for each field, the sample data provided in the Loans spreadsheet contains all options.

Produce screen prints in **Design** view of the validation you have applied.

(3)

- (e) Import the data from the Loans spreadsheet into your database.

Produce screen prints of **your** tables showing at least five records and the full record count. (If the fields are too wide to fit on one page, truncated data is allowed.)

(2)

(Total for Question 1 = 24 marks)

2 (a) The technicians are going to work on faulty equipment.

Create a query that will list equipment that has been reported as faulty and needs fixing.

Screen print your query in **Design** view, making sure that all required tables, fields, criteria, parameters and properties can be clearly seen.

(4)

- (b) (i) Haroon wants to be able to contact staff who have not returned equipment by the due date. He wants to use a standard message which will use information from the database.

Dear Oliver

According to my records you borrowed a DLP Projector (Loan-Equip-0002) on 01/10/2017. It is overdue by three days. It should have been returned by 15/10/2017.

Please return it at your earliest convenience.

Thank you

Haroon

Create a query that will extract appropriate data from the database.

Screen print your query in **Design** view, making sure that all required tables, fields, criteria, parameters and properties can be clearly seen.

(9)

- (ii) Haroon wants a weekly report that lists all equipment that has not been returned on time.

He will use the same report format every week and wants the date the report was generated to be displayed on the report.

Sort the data so that it is shown from the most number of days overdue to the least number of days overdue.

Use your query from question 2(b) (i) to extract the data for the report.

Screen-print your report in **Design** and **Print** views. Ensure that all fields and criteria can clearly be seen.

(7)

(c) The equipment table is generating inconsistent information.

Equipment					
AssetNumber	Category	AssetType	LastSafetyTest	Faulty	FaultNotes
Loan-Equip-0003	Display	DLP Projector	18 May 2017	Yes	Bulb to be replaced
Loan-Equip-0004	Display	DLP Projector	18 May 2017	Yes	HDMI socket not working - fixed 20March2017

Analyse how the structure of the database could be improved to resolve this problem.

Type your response in the space provided in the evidence template document.

(9)

(Total for Question 2 = 29 marks)

- 3** Haroon needs a chart to show him the number of times each asset type has been loaned to staff.

He also wants the information presented in a way that will allow him to clearly see the most popular type of asset category.

He wants this information in a report displayed as a chart.

Create a report that displays this information as a chart.

Produce screen prints showing your report in REPORT view and any macros, queries etc. used to generate the data required for the chart. Ensure that all required information and formatting can be clearly seen.

(Total for Question 3 = 12 marks)

- 4** Haroon needs a dashboard for the database.

It must provide the user with buttons that will allow them to:

- open the data entry form ready for data entry
- run a query and display the results on-screen
- access a report and give the user the option to print or preview the report.

Create a dashboard that meets these requirements.

Screen-print the dashboard in **Form** view.

Screen-print in **Design** view any macros, code and/or properties you have used.

(Total for Question 4 = 6 marks)

- 5** The equipment must be tested every two years to make sure it is safe to be used. If equipment fails the test or becomes overdue for a test, it cannot be used.

Haroon needs to track this activity.

Assess the extent to which the database can be used for this purpose.

(Total for Question 5 = 9 marks)

TOTAL FOR PAPER = 80 MARKS

Unit 4 – Mark scheme

Note to examiners

Where example screenshots are included, these are indicative content only and not a definitive answer. Students should receive credit based on the marking instructions in the answer column.

Question number	Answer	Mark
1(a)(i)	Award one mark for: Suitable data type for 'Faulty' field, e.g. Yes/No	1

Question number	Answer	Mark
1(a)(ii)	Award one mark for each of the following up to a maximum of three marks. <ul style="list-style-type: none"> • Lookup added to category field (1) • Lookup lookup contains four correct entries only ("Display";"Computer";"Sound";"Storage") (1) • Data entry is limited to items in the list only (1) 	3

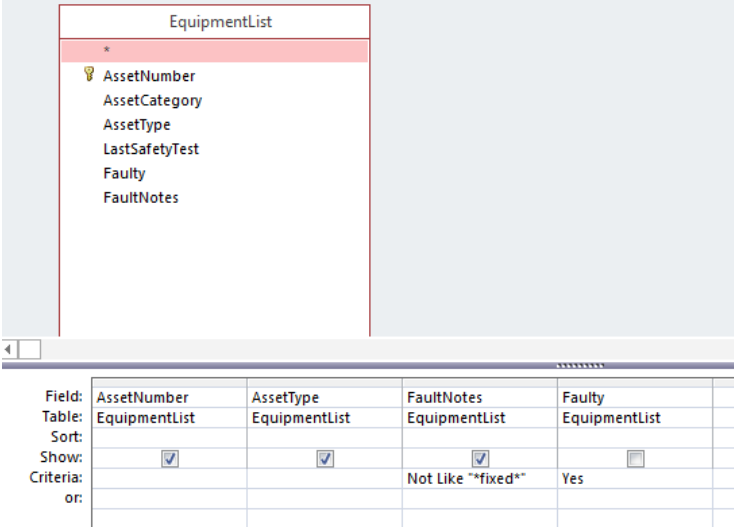
Question number	Answer	Mark
1(b)	Award one mark for each of the following up to a maximum of six marks. <ul style="list-style-type: none"> • Correct fields from Equipment table included in Form must either show that data entry for AssetNumber field is restricted or field should be excluded from the form (1) • Form labels, titles are appropriate and Entry boxes are sized appropriately to reflect the data that will be entered, e.g. not default field names or names generated by wizard (1) • Suitable query used to append data entered to the equipment table (or code equivalent) (1) • Default value of 'Last Safety Test' set to today's date, e.g. =now() (1) • Combo box or similar used for Category (1) • Button present and code/macro to save data to the table (1) 	6

Question number	Answer	Mark																																												
1(c)	<div><div><div><div><div>EquipmentList</div><div>AssetNumber</div><div>AssetCategory</div><div>AssetType</div><div>LastSafetyTest</div><div>Faulty</div><div>FaultNotes</div></div></div><div><div>Loans</div><div>LoanLogNumber</div><div>EmployeeNumber</div><div>AssetNumber</div><div>DateOut</div><div>LoanPeriod</div><div>Returned</div></div><div><div>Staff</div><div>EmployeeNumber</div><div>FirstName</div><div>LastName</div><div>Role</div></div></div><div><table><tr><th>Field Name</th><th>Data Type</th></tr><tr><td>LoanLogNumber</td><td>AutoNumber</td></tr><tr><td>EmployeeNumber</td><td>Number</td></tr><tr><td>AssetNumber</td><td>Number</td></tr><tr><td>DateOut</td><td>Date/Time</td></tr><tr><td>LoanPeriod</td><td>Number</td></tr><tr><td>Returned</td><td>Yes/No</td></tr></table><div><div>General</div><div>Lookup</div><table><tr><td>Field Size</td><td>Integer</td></tr><tr><td>Format</td><td></td></tr><tr><td>Decimal Places</td><td>Auto</td></tr><tr><td>Input Mask</td><td></td></tr></table></div><div><div>General</div><div>Lookup</div><table><tr><td>Field Size</td><td>Long Integer</td></tr><tr><td>Format</td><td>"Loan-Equip-"0000</td></tr><tr><td>Decimal Places</td><td>Auto</td></tr><tr><td>Input Mask</td><td></td></tr><tr><td>Caption</td><td></td></tr><tr><td>Default Value</td><td>0</td></tr><tr><td>Validation Rule</td><td></td></tr><tr><td>Validation Text</td><td></td></tr><tr><td>Required</td><td>No</td></tr><tr><td>Indexed</td><td>No</td></tr><tr><td>Text Align</td><td>General</td></tr></table></div></div></div> <div></div>	Field Name	Data Type	LoanLogNumber	AutoNumber	EmployeeNumber	Number	AssetNumber	Number	DateOut	Date/Time	LoanPeriod	Number	Returned	Yes/No	Field Size	Integer	Format		Decimal Places	Auto	Input Mask		Field Size	Long Integer	Format	"Loan-Equip-"0000	Decimal Places	Auto	Input Mask		Caption		Default Value	0	Validation Rule		Validation Text		Required	No	Indexed	No	Text Align	General	9
Field Name	Data Type																																													
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Question number	Answer	Mark
1(c) Cont.	<p>Award one mark for each of the following components correctly shown in the screen prints up to a maximum of nine marks.</p> <ul style="list-style-type: none"> • Use of appropriate field names and naming conventions (1) • Employee table AND Loans table is present (1) • 1:M relationship between Equipment – Loans (1) • 1:M relationship between Employee – Loans (1) • Appropriate Primary Keys used, e.g. Employee table – EmployeeNumber Loans Table – LoanLogNumber (1) • Autonumber or composite key used to generate a unique number of each loan (LoanLogNumber field) (1) • Date/time is used for DateOut (1) • Any integer data type is used for LoanPeriod (1) • Asset Number in Loans table displays in Loan-Equip-0000 format Asset number formatted correctly (1) (example to be added) 	

Question number	Answer	Mark																																																		
1(d)	<div>Loan length</div> <div><div><div>General</div><div>Lookup</div></div><table><tr><td>Field Size</td><td>Double</td></tr><tr><td>Format</td><td></td></tr><tr><td>Decimal Places</td><td>Auto</td></tr><tr><td>Input Mask</td><td></td></tr><tr><td>Caption</td><td></td></tr><tr><td>Default Value</td><td>0</td></tr><tr><td>Validation Rule</td><td>>=1 And <=14</td></tr><tr><td>Validation Text</td><td>Loan Period should be at least 1 day and no more that 14 days</td></tr><tr><td>Required</td><td>No</td></tr><tr><td>Indexed</td><td>No</td></tr><tr><td>Text Align</td><td>General</td></tr></table></div> <div><div>Role</div><div><div><div>General</div><div>Lookup</div></div><table><tr><td>Display Control</td><td>Combo Box</td></tr><tr><td>Row Source Type</td><td>Value List</td></tr><tr><td>Row Source</td><td>"Training";"Management"</td></tr><tr><td>Bound Column</td><td>1</td></tr><tr><td>Column Count</td><td>1</td></tr><tr><td>Column Heads</td><td>No</td></tr><tr><td>Column Widths</td><td>2.54cm</td></tr><tr><td>List Rows</td><td>16</td></tr><tr><td>List Width</td><td>2.54cm</td></tr><tr><td>Limit To List</td><td>Yes</td></tr><tr><td>Allow Multiple Values</td><td>No</td></tr><tr><td>Allow Value List Edits</td><td>No</td></tr><tr><td>List Items Edit Form</td><td></td></tr><tr><td>Show Only Row Source V</td><td>No</td></tr></table></div></div> <div>Award one mark for each of the following components correctly shown in the screen prints up to a maximum of three marks.</div> <div><ul style="list-style-type: none">Validation applied to loan period, e.g. >=1 AND <=14 (1)Role only accepts two possible inputs (Training, Management) (1)Uses an appropriate error message that feeds back to user the expected outcome/nature of error (1)</div>	Field Size	Double	Format		Decimal Places	Auto	Input Mask		Caption		Default Value	0	Validation Rule	>=1 And <=14	Validation Text	Loan Period should be at least 1 day and no more that 14 days	Required	No	Indexed	No	Text Align	General	Display Control	Combo Box	Row Source Type	Value List	Row Source	"Training";"Management"	Bound Column	1	Column Count	1	Column Heads	No	Column Widths	2.54cm	List Rows	16	List Width	2.54cm	Limit To List	Yes	Allow Multiple Values	No	Allow Value List Edits	No	List Items Edit Form		Show Only Row Source V	No	3
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Question number	Answer	Mark
1(e)	<p>Award one mark for each of the following components correctly shown in the screen prints up to a maximum of three marks.</p> <ul style="list-style-type: none"> Staff table – 6 records (1) Loans Table – 27 Records (1) 	2

Question number	Answer	Mark
2(a)	 <p>Award one mark for each of the following components correctly shown in the screen prints up to a maximum of four marks.</p> <ul style="list-style-type: none"> Correct Table and Appropriate fields ONLY included in query (AssetNumber, AssetType, Faulty, FaultNotes – Allow Category) (1) Faulty field uses correct criteria (Yes) (1) Wildcard or similar used to exclude equipment containing 'fixed' in FaultNotes Field (1) All fields apart from Faulty are set to display (1) 	4

Question number	Answer	Mark																																																																								
2(b)(i)	<div><div><div><div><div>EquipmentList</div><div>AssetNumber AssetCategory AssetType LastSafetyTest Faulty FaultNotes</div></div><div><div>Loans</div><div>LoanLogNumber EmployeeNumber AssetNumber DateOut LoanPeriod Returned</div></div><div><div>Staff</div><div>EmployeeNumber FirstName LastName Role</div></div></div><div><table><tr><td>Field:</td><td>AssetNumber</td><td>AssetType</td><td>FirstName</td><td>DateDueBack: [Loans.DateOut] + [Loans.LoanPeriod]</td><td>Days Overdue: Now()-[DateDueBack]</td><td>Returned</td></tr><tr><td>Table:</td><td>Loans</td><td>EquipmentList</td><td>Staff</td><td></td><td></td><td>Loans</td></tr><tr><td>Sort:</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Show:</td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr><tr><td>Criteria:</td><td></td><td></td><td></td><td>< Now()</td><td></td><td>No</td></tr><tr><td>or:</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></div><div><table><tr><td>DateDueBack: [Loans.DateOut] + [Loans.LoanPeriod]</td><td>Days Overdue: Now()-[DateDueBack]</td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr><tr><td>< Now()</td><td></td></tr><tr><td></td><td></td></tr></table></div><div><div>Property Sheet</div><div>Selection type: Field Properties</div><div><div>General</div><div>Lookup</div><table><tr><td>Description</td><td></td></tr><tr><td>Format</td><td>Short Date</td></tr><tr><td>Input Mask</td><td></td></tr><tr><td>Caption</td><td></td></tr></table></div></div><div><div>General</div><div>Lookup</div><table><tr><td>Description</td><td></td></tr><tr><td>Format</td><td>Fixed</td></tr><tr><td>Decimal Places</td><td>0</td></tr><tr><td>Input Mask</td><td></td></tr><tr><td>Caption</td><td></td></tr></table></div></div></div>	Field:	AssetNumber	AssetType	FirstName	DateDueBack: [Loans.DateOut] + [Loans.LoanPeriod]	Days Overdue: Now()-[DateDueBack]	Returned	Table:	Loans	EquipmentList	Staff			Loans	Sort:							Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Criteria:				< Now()		No	or:							DateDueBack: [Loans.DateOut] + [Loans.LoanPeriod]	Days Overdue: Now()-[DateDueBack]					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	< Now()				Description		Format	Short Date	Input Mask		Caption		Description		Format	Fixed	Decimal Places	0	Input Mask		Caption		9
Field:	AssetNumber	AssetType	FirstName	DateDueBack: [Loans.DateOut] + [Loans.LoanPeriod]	Days Overdue: Now()-[DateDueBack]	Returned																																																																				
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Question number	Answer	Mark
2(b)(i) Cont.	<p>Award one mark for each of the following components correctly shown in the screen prints up to a maximum of nine marks.</p> <ul style="list-style-type: none"> • Correct related tables added, e.g. EquipmentList, Loans and Staff (1) • Correct fields included in query (AssetNumber AssetType, FirstName, DateDueBack, DaysOverdue Returned (1) • 'Returned' uses correct Criteria, e.g. 'No' (1) • All fields apart from Returned are set to display (1) • Correct expression used to calculate 'date due back' - Expression – [Loans.DateOut] + [Loans.LoanPeriod] (1) • Date due back set to display result in appropriate format, e.g. Result type = Short date (1) • Appropriate logic/criteria for calculating overdue equipment, e.g. DateDueback <Now() (1) • Calculated Field added to work out days overdue, e.g. Now()-[DateDueBack] (1) • Results of 'Days overdue' display in whole numbers (1) <p>Allow solutions that use a parameter from the user to establish current date.</p>	

Question number	Answer	Mark																																					
2(b)(ii)	<p>Property Sheet Selection type: Report</p> <p>Report ▼</p> <p>Format Data Event Other All</p> <table><tr><td>Record Source</td><td>LateEquipment</td></tr><tr><td>Filter</td><td></td></tr><tr><td>Filter On Load</td><td>No</td></tr><tr><td>Order By</td><td></td></tr><tr><td>Order By On Load</td><td>Yes</td></tr><tr><td>Allow Filters</td><td>Yes</td></tr></table> <p>Overdue Equipment List</p> <p>Overdue Equipment List For : 04 May 2017</p> <table><tr><td>Asset Number</td><td>Asset Type</td><td>First Name</td><td>Date Due Back</td><td>Days</td></tr><tr><td>Loan-Equip-0016</td><td>Headset</td><td>Sohia</td><td>03/03/2017</td><td></td></tr><tr><td>Loan-Equip-0003</td><td>DLP Projector</td><td>Aqib</td><td>07/04/2017</td><td></td></tr></table> <p>Overdue Equipment List</p> <p>Overdue Equipment List For : =Now()</p> <table><tr><td>Asset Number</td><td>Asset Type</td><td>First Name</td><td>Date Due Back</td><td>Days</td></tr><tr><td>AssetNumber</td><td>AssetType</td><td>FirstName</td><td>DateDueBack</td><td>Days</td></tr></table> <p>Page Footer: Page " & [Page] & " of</p> <p>Award one mark for each of the following components correctly shown in the screen prints up to a maximum of seven marks.</p> <ul style="list-style-type: none">• A calculated/automatic field used to add date to report (1)• Report is linked to query so data is updated when every report is opened and correct fields used (1)• Appropriate and meaningful title and labels included on report (i.e. changed from default field names generated by wizard) (1)• The date on the report generated is placed in a sensible location with a meaningful label/heading, e.g. at bottom of page with label, integrated into Report title, and appropriate date format used (1)• Appropriate layout and alignment used throughout the report (1)• Data is sorted in descending order based on days overdue (1)• Data is complete and not truncated (1)	Record Source	LateEquipment	Filter		Filter On Load	No	Order By		Order By On Load	Yes	Allow Filters	Yes	Asset Number	Asset Type	First Name	Date Due Back	Days	Loan-Equip-0016	Headset	Sohia	03/03/2017		Loan-Equip-0003	DLP Projector	Aqib	07/04/2017		Asset Number	Asset Type	First Name	Date Due Back	Days	AssetNumber	AssetType	FirstName	DateDueBack	Days	7
Record Source	LateEquipment																																						
Filter																																							
Filter On Load	No																																						
Order By																																							
Order By On Load	Yes																																						
Allow Filters	Yes																																						
Asset Number	Asset Type	First Name	Date Due Back	Days																																			
Loan-Equip-0016	Headset	Sohia	03/03/2017																																				
Loan-Equip-0003	DLP Projector	Aqib	07/04/2017																																				
Asset Number	Asset Type	First Name	Date Due Back	Days																																			
AssetNumber	AssetType	FirstName	DateDueBack	Days																																			

Question number	Indicative content	Mark
2(c)	<p>Identify the nature of the problem with the current system, e.g. the data is showing that the item is faulty but the fault notes say that it has been fixed. There is no way to know if this is a new fault, the fix was unsuccessful or if the technician forgot to uncheck the faulty box.</p> <p>A separate, related table should be used for recording faults, linked to the equipment table using the AssetNumber, so that a history of faults and fixes can be tracked.</p> <p>The Fault table should have a many-to-one link with the Equipment table as each piece of equipment could be reported and fixed a number of times over the course of its use.</p> <p>The fault table could record when items have been reported faulty, the nature of the problem, if they have been fixed and when. This would allow them to set and monitor rules, e.g. it could be policy to have equipment fixed within five working days.</p> <p>The fault table could also be linked to the staff table so the member of staff that reported the fault can be identified so that they can be contacted to ask more about the problem if the 'notes' do not provide enough information to identify/fix it.</p>	9

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	<ul style="list-style-type: none"> Analysis is flawed or superficial, containing simple statements that show limited understanding of the subject matter. Solution may contain some aspects that are appropriate, but is generally ineffective.
Level 2	4–6	<ul style="list-style-type: none"> Analysis is sound, containing minor inaccuracies or omissions, showing some understanding of the given issue. Solution is workable but may have minor issues.
Level 3	7–9	<ul style="list-style-type: none"> Analysis is sound and developed, containing ideas that are linked together in a fluent and logical way, showing a thorough understanding of the given issue. Solution is appropriate and workable.

Question number	Answer	Mark																																																																																																																																												
3	<div><div><div><div><div>EquipmentList</div><div><div>AssetNumber</div><div>AssetCategory</div><div>AssetType</div><div>LastSafetyTest</div><div>Faulty</div><div>FaultNotes</div></div></div></div><div><div>1</div><div>∞</div></div><div><div>Loans</div><div><div>LoanLogNumber</div><div>EmployeeNumber</div><div>AssetNumber</div><div>DateOut</div><div>LoanPeriod</div><div>Returned</div></div></div></div><div><table><tr><td>Field:</td><td>CountOfAssetName:</td><td>AssetType</td><td>AssetNumber</td><td>AssetType</td><td>AssetType</td></tr><tr><td>Table:</td><td>EquipmentList</td><td>EquipmentList</td><td>Loans</td><td>EquipmentList</td><td>EquipmentList</td></tr><tr><td>Total:</td><td>Count</td><td>Expression</td><td>Group By</td><td>Group By</td><td>Group By</td></tr><tr><td>Sort:</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Show:</td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Criteria:</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>or:</td><td></td><td></td><td></td><td></td><td></td></tr></table><table><tr><th>CountOfAssetName</th><th>Expr1001</th><th>AssetNumber</th><th>AssetType</th></tr><tr><td>4</td><td>LCD Projector</td><td>Loan-Equip-0001</td><td>LCD Projector</td></tr><tr><td>1</td><td>LCD Projector</td><td>Loan-Equip-0002</td><td>LCD Projector</td></tr><tr><td>3</td><td>DLP Projector</td><td>Loan-Equip-0003</td><td>DLP Projector</td></tr><tr><td>1</td><td>DLP Projector</td><td>Loan-Equip-0004</td><td>DLP Projector</td></tr><tr><td>1</td><td>15" Laptop</td><td>Loan-Equip-0005</td><td>15" Laptop</td></tr><tr><td>1</td><td>15" Laptop</td><td>Loan-Equip-0006</td><td>15" Laptop</td></tr><tr><td>3</td><td>15" Laptop</td><td>Loan-Equip-0007</td><td>15" Laptop</td></tr><tr><td>1</td><td>14" Laptop</td><td>Loan-Equip-0008</td><td>14" Laptop</td></tr><tr><td>1</td><td>14" Laptop</td><td>Loan-Equip-0009</td><td>14" Laptop</td></tr><tr><td>1</td><td>10 inch Tablet</td><td>Loan-Equip-0010</td><td>10 inch Tablet</td></tr><tr><td>3</td><td>10 inch Tablet</td><td>Loan-Equip-0011</td><td>10 inch Tablet</td></tr><tr><td>1</td><td>Speakers</td><td>Loan-Equip-0012</td><td>Speakers</td></tr><tr><td>1</td><td>Speakers</td><td>Loan-Equip-0013</td><td>Speakers</td></tr><tr><td>2</td><td>Headphones</td><td>Loan-Equip-0014</td><td>Headphones</td></tr><tr><td>1</td><td>Headset</td><td>Loan-Equip-0015</td><td>Headset</td></tr><tr><td>2</td><td>Headset</td><td>Loan-Equip-0016</td><td>Headset</td></tr></table><p>Most Commonly Borrowed Equipment</p><div><p>Equipment Loan Data</p><table><tr><th>Equipment Name</th><th>Number Of Loans</th><th>Category</th></tr><tr><td>10" Tablet</td><td>4</td><td>Computer</td></tr><tr><td>14" Laptop</td><td>2</td><td>Computer</td></tr><tr><td>15" Laptop</td><td>5</td><td>Computer</td></tr><tr><td>DLP Projector</td><td>3</td><td>Display</td></tr><tr><td>DLP Projector</td><td>1</td><td>Display</td></tr><tr><td>Headphones</td><td>2</td><td>Sound</td></tr><tr><td>Headset</td><td>3</td><td>Sound</td></tr><tr><td>LCD Projector</td><td>5</td><td>Display</td></tr><tr><td>Speakers</td><td>2</td><td>Sound</td></tr></table></div></div></div>	Field:	CountOfAssetName:	AssetType	AssetNumber	AssetType	AssetType	Table:	EquipmentList	EquipmentList	Loans	EquipmentList	EquipmentList	Total:	Count	Expression	Group By	Group By	Group By	Sort:						Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Criteria:						or:						CountOfAssetName	Expr1001	AssetNumber	AssetType	4	LCD Projector	Loan-Equip-0001	LCD Projector	1	LCD Projector	Loan-Equip-0002	LCD Projector	3	DLP Projector	Loan-Equip-0003	DLP Projector	1	DLP Projector	Loan-Equip-0004	DLP Projector	1	15" Laptop	Loan-Equip-0005	15" Laptop	1	15" Laptop	Loan-Equip-0006	15" Laptop	3	15" Laptop	Loan-Equip-0007	15" Laptop	1	14" Laptop	Loan-Equip-0008	14" Laptop	1	14" Laptop	Loan-Equip-0009	14" Laptop	1	10 inch Tablet	Loan-Equip-0010	10 inch Tablet	3	10 inch Tablet	Loan-Equip-0011	10 inch Tablet	1	Speakers	Loan-Equip-0012	Speakers	1	Speakers	Loan-Equip-0013	Speakers	2	Headphones	Loan-Equip-0014	Headphones	1	Headset	Loan-Equip-0015	Headset	2	Headset	Loan-Equip-0016	Headset	Equipment Name	Number Of Loans	Category	10" Tablet	4	Computer	14" Laptop	2	Computer	15" Laptop	5	Computer	DLP Projector	3	Display	DLP Projector	1	Display	Headphones	2	Sound	Headset	3	Sound	LCD Projector	5	Display	Speakers	2	Sound	12
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Question number	Answer	Mark
3 Cont.	<p>Award one mark for each of the following components correctly shown in the screen prints up to a maximum of 12 marks.</p> <ul style="list-style-type: none"> • Bar/column chart created (1) • Only correct fields used to generate chart (count of assets, AssetNumber, AssetType) (1) • Chart shows only 'computer' equipment category (AssetNumbers 5-11) (1) • Chart shows number of occurrences from loan file of each included item (1) • Meaningful report or chart title used (1) • AssetNumber data labels altered to be more meaningful/match custom display from database (i.e. not just numerical 5-11) (1) • Chart data grouped by AssetType (1) • Appropriate legend used for AssetType (1) • Appropriate scale for Y axis (1) • Axis appropriately labelled (1) • No truncation of data or labels (1) • Appropriate sizing of elements on page, e.g. title larger than axis labels, data labels and legend appropriately sized (1) 	

Question number	Answer	Mark
4	<p>Award one mark for each of the following components correctly shown in the screen prints up to a maximum of six marks.</p> <ul style="list-style-type: none"> • An appropriate heading title for the dashboard (1) • Three appropriately labelled buttons (1) • Layout of dashboard is consistent (1) • Suitable method applied to launch data entry in data entry view (1) • Suitable method to launch a query and display the results on-screen (1) • Suitable method to launch one report and provide user with option to either print or view (1) 	6

Question number	Indicative content	Mark
5	<p>Learners should consider how well the current data structure, the data it holds and how it helps with tracking the safety testing of the equipment.</p> <p>The database currently holds data that records the last time that the equipment was tested which could be used, along with a calculated field, to identify when a test is due.</p> <p>The data only identifies when a test was done and not if it passed/failed.</p> <p>The FaultNotes field is not atomic as it is being used for more than one purpose – the fault and the date it was fixed. This would make it hard to determine whether a fault has been rectified.</p> <p>Data has not been normalised properly and is not in third normal form. As it stands, the AssetNumber is the primary key, which has to be unique, so you could not add the same Asset ID more than once without generating an error.</p> <p>At least one other table is required so that there becomes a one-to-many relationship between the asset and the tests. This is because one asset can have many tests. The fields LastSafetyTest, Faulty and FaultNotes could be removed from this table.</p> <p>The table should be able to allow a user/technician to provide details of multiple faults and/or failing safety test as it may fail the safety test on multiple things.</p> <p>The database does not track the state of the test in relation to the loans. The structure and functionality would need to be developed so that Haroon could more efficiently identify and schedule testing etc. The system would need to use queries to allow it to do the following.</p> <ul style="list-style-type: none"> • Identify items that are due to be safety-tested soon so a schedule can be made and items that are due at the same time/within a day or two can be retested at the same time. • Add rules to the database that check if an item is to be loaned out and that the safety test does not expire during the loan period. It should not allow the employee to borrow the equipment if the safety test expires. • The database should put a hold on any item that has failed or has expired its safety period. It should alert Haroon that this is an urgent action. 	9

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	<ul style="list-style-type: none"> • Applies understanding with limited coherence, showing limited understanding of the given issue. • Assessment of solution is superficial or unbalanced, and judgements lack support from evidence.
Level 2	4–6	<ul style="list-style-type: none"> • Applies understanding to make some coherent connections, showing some understanding of the given issue. • Assessment of solution is partially developed, but this may be unbalanced, using evidence to support some judgements.
Level 3	7–9	<ul style="list-style-type: none"> • Applies understanding coherently, showing a thorough understanding of the given issue. • Assessment of solution is balanced and developed, using evidence to support judgements throughout.

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