



**Victorian Certificate of Education
2017**

STUDENT NUMBER Letter

COMPUTING: SOFTWARE DEVELOPMENT

Written Examination

Sample Exam, 2017

Reading time: *.* to *.* (15 minutes)

Writing time: *.* to *.* (2 hours)

QUESTION AND ANSWER BOOK

Structure of book

<i>Section</i>	<i>Number of questions</i>	<i>Number of questions to be answered</i>	<i>Number of marks</i>
A	20	20	20
B	7	7	20
C	15	15	60
			Total 100

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners, rulers and one scientific calculator.
- Students are NOT permitted to bring into the examination room: blank sheets of paper and/or white out fluid/tape.

Materials supplied

- Question and answer booklet of 18 pages.
- Detachable insert containing a case study for Section C in the centrefold.
- Answer sheet for multiple choice questions.

Instructions

- Detach the insert from the centre of this book during reading time.
- Write your **student number** in the space provided above on this page.
- Check that your **name** and **student number** as printed on your answer sheet for multiple-choice questions are correct, **and** sign your name in the space provided to verify this.
- All written responses must be English.

At the end of the examination

- Place the answer sheet for multiple-choice questions inside the front cover of this book.

Students are NOT permitted to bring mobile phones and/or any other unauthorised electronic communication devices into the examination room.

SECTION A – Multiple choice questions**Instructions for Section A**

Answer **all** questions in pencil on the answer sheet provided for multiple-choice question.

Choose the response that is **correct** or that **best answers** the question.

A correct answer scores 1, an incorrect answer scores 0.

Marks will **not** be deducted for incorrect answers.

No marks will be given if more than one answer is completed for any question

Question 1

Which of the following is a valid organisational objective?

- A. Make money
- B. Serve the community
- C. Engage 5 new clients per month
- D. Provide excellent customer service

Question 2

The four stages of the Problem Solving Methodology are:

- A. Analysis, Design, Implementation, Feedback
- B. Design, Implementation, Feedback, Packaging
- C. Analysis, Development, Evaluation, Construction
- D. Analysis, Design, Development, Evaluation

Question 3

Which of the following data sets would be an example of quantitative data?

- A. “Great”, “Fantastic”, “Didn’t like it”
- B. 0,1,1,1,2,3,3,5,7
- C. A transcript from an interview
- D. “The User Interface was a little hard to follow”

The following information is required for Questions 4, 5 and 6

Repeat

Ask for input: number

If number is between 1 and 10 then

If number is 7 then

Display “You Win!”

Else

Display “Pick Again!”

Endif

Else

Ask for input: number

Endif

Until number = 7

SECTION A – continued
TURN OVER

Question 4

What is most likely data type for the variable *number*?

- A. Boolean
- B. Integer
- C. String
- D. Floating Point

Question 5

Which of the following inputs would result in “Pick Again!”, “Pick Again!”, “You Win!” being displayed (in that order)?

- A. 3, 4, 7
- B. 1, 3, 4, 5, 7
- C. 11, 3, 7
- D. 3, 5, 9

Question 6

Which of the following inputs would result in the algorithm ending without anything being displayed?

- A. 11
- B. 9, 7
- C. 13, 7
- D. 0

Question 7

What tool can be used to test to see if an algorithm is producing the correct set of outputs for a set of inputs?

- A. Storyboard
- B. Mock up
- C. IPO chart
- D. Trace table

Question 8

A character data type stores data that is:

- A. A single ASCII character
- B. A prime number
- C. A positive integer
- D. True or false

Question 9

A feature of a VPN is that it:

- A. Allows access to streaming services
- B. Encrypts the connection between the client and the network
- C. Can only be used via a wired connection
- D. Does not require a power supply

SECTION A – continued
TURN OVER

Question 10

For a binary search to be effective, an array first needs to be:

- A. Small in size
- B. Sorted
- C. Have greater than 1000 elements
- D. Contain only numerical data

Question 11

Internal documentation can best be described as:

- A. Notes by the programmer to any user of the program
- B. A guide as to how to use the program best
- C. A description of how the program was created
- D. A commentary on the programmer's world view

The following information is required for Questions 12, 13 and 14.

```
<PARTS>
<PART>
  <ITEM>Motherboard</ITEM>
  <MANUFACTURER>ASUS</MANUFACTURER>
  <MODEL>P3B-F</MODEL>
  <COST> 125.50</COST>
</PART>
<PART>
  <ITEM>Video Card</ITEM>
  <MANUFACTURER>ATI</MANUFACTURER>
  <MODEL>All-in-Wonder Pro</MODEL>
  <COST> 162.00</COST>
</PART>
```

Question 12

The file format shown is called:

- A. CSV
- B. TXT
- C. MDB
- D. XML

Question 13

The <ITEM> tag is best described as a:

- A. Field
- B. Record
- C. File
- D. Character

Question 14

The <PART> tag is best described as a:

- A. Field
- B. Record
- C. File
- D. Character

Question 15

An example of an accidental threat to data could be:

- A. Flood in the basement of the building
- B. Unauthorised access to the information system
- C. Users not familiar with how to use the system properly
- D. Power failure

Question 16

Which of the following is **not** an element in a Use Case Diagram?

- A. Actor
- B. System Boundary
- C. Includes
- D. Data Flow

Question 17

The three different control structures that an algorithm can employ are:

- A. Step by step, linear processing, agile processing
- B. Sequence, Choice, Selection
- C. Iteration, Sequence, Step by step
- D. Sequence, Repetition, Selection

Question 18

A user interface that is described as being 'responsive' is:

- A. One that is fast above all else
- B. One that gives the user good instructions
- C. One that is not only fast, but gives good feedback to the user
- D. One that is able to print to a number of different network devices

Question 19

Which of the following would be a suitable name in the code for a button object in a user interface?

- A. Button1
- B. btnAccept
- C. ButtonWithFunctionInUserInterface
- D. x

Question 20

Phillip is wanting to incorporate images he has found on the Internet into an App he is developing.

The relevant legislation in this case would be:

- A. Spam Act
- B. Privacy Act
- C. Copyright Act
- D. Charter of Human Rights

END OF SECTION A

SECTION B – Short-answer questions

Instructions for Section B

Answer **all** questions in the spaces provided.

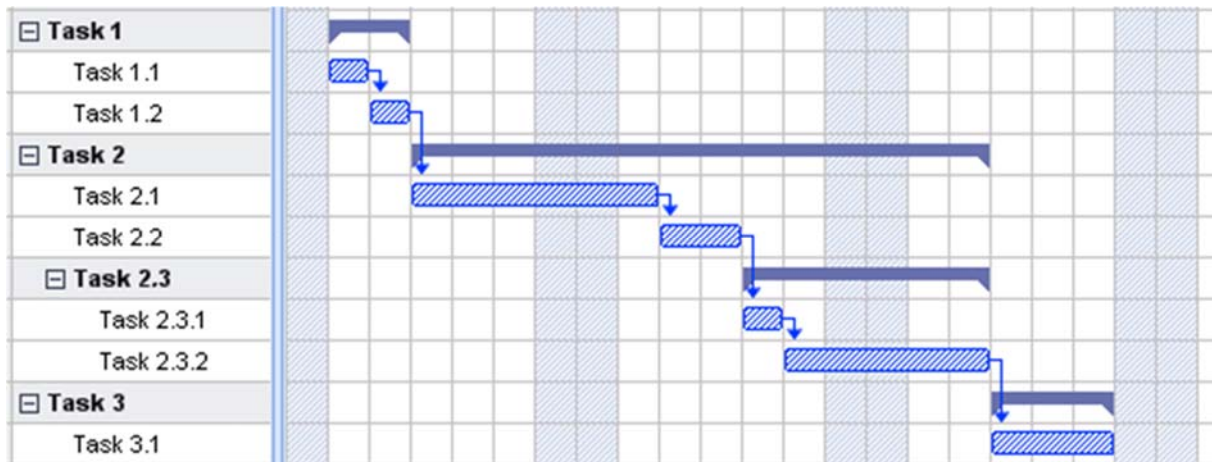
Question 1

With reference to the stages of the Problem Solving Methodology, validation takes place within the _____ stage.

1 mark

Question 2

The Gantt chart below outlines the tasks that need to be completed for a project.



a. What are the arrows in the above diagram called and what do they represent?

2 marks

b. Assuming that the greyed-out columns are the weekend and no work will be taking place on these days, what is the duration of Task 2.1?

1 mark

c. If Task 2.1 were to be delayed by 1 day, on what day of the week would the project be completed?

1 mark

SECTION B – continued
TURN OVER

Question 3

Each of the items described below is a **functional** or **non-functional** requirement of a solution. State which category each one falls into.

Item	Functional or Non-functional
How easy it is to use the software.	
The outputs that the software will generate.	
How long the software can perform its' required functions.	
How easily the software solution can be maintained.	

4 marks

Question 4

There are a number of ways to generate different design ideas. Describe **two** methods that can be used and explain which of the two you would recommend for use by a local council attempting to solve the issue of crime in the area?

Method 1: _____

Method 2: _____

Recommended: _____

3 marks

Question 5

Accidental threats to data are the most common cause for loss of data. Describe **two** ways in which data can be accidentally lost.

1: _____

2: _____

2 marks

**SECTION B – continued
TURN OVER**

Question 6

Study the pseudo-code algorithm below:

Begin

$A \leftarrow 0$

$B \leftarrow 20$

$T \leftarrow 0$

While A < B Do

$A \leftarrow A + 1$

$B \leftarrow B - 2$

Display 'A and B are ', B-A, ' away from each other'

$T \leftarrow T + 10$

End While

Display 'Time elapsed ', T, ' seconds'

End

- a. What are the final values of A and B?

Values: _____ 2 marks

- b. Work out how many times the 'While' loop will be executed. What will be displayed after the 'While' loop is finished?

Output: _____ 1 mark

Question 7

One of the disadvantages of implementing a new information system can be the deskilling of employees.

- a. What does the term 'deskilling' mean?

 _____ 1 mark

- b. Explain **two** ways that the effect of deskilling can be minimised.

1 _____

 2 _____
 _____ 2 marks

SECTION C – Case Study

Instructions for Section C

<p>Please remove the insert from the centre of this book during reading time. Use the case study provided in the insert to answer the questions in this section. Answer all questions in the spaces provided.</p>
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Question 1

- a. Describe the scope of the proposed software solution by listing **two** measures of efficiency and **two** measures of effectiveness.

Efficiency	Measure 1: Measure 2:
Effectiveness	Measure 1: Measure 2:

4 marks

- b. List **three** constraints on the proposed software solution.

Constraint 1: _____

Constraint 2: _____

Constraint 3: _____

3 marks

Question 2

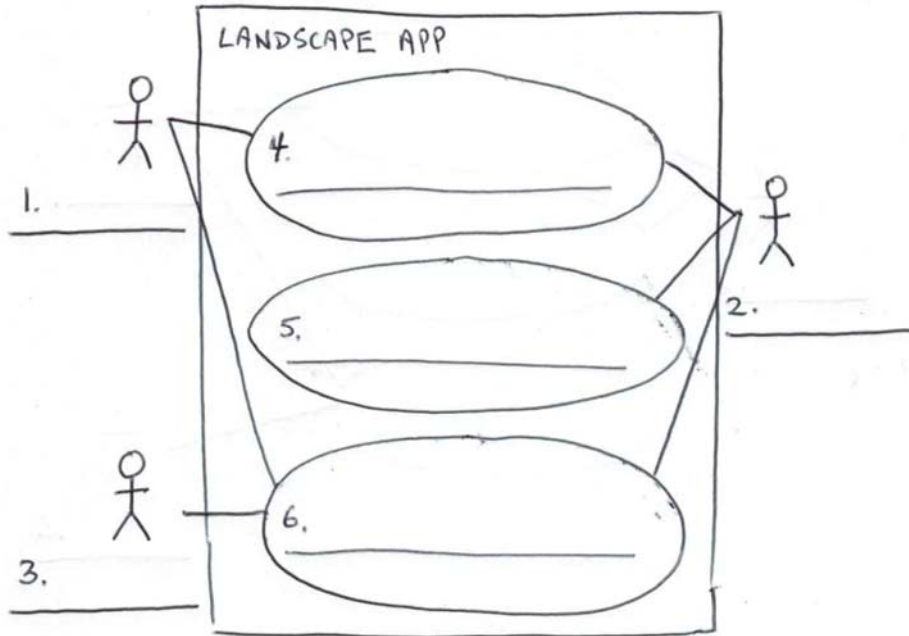
Khalil is working hard on the construction of an SRS when Jill enquires as to what he is doing. She is keen for him to start work on the design of the App, but Khalil insists that creating an SRS is a vital step in the development of a software solution. What is an SRS and what benefit will it be to **Jill's Green Thumbs**?

2 marks

SECTION C – continued
TURN OVER

Question 3

Khalil sketches the beginning of a Use Case Diagram based on his understanding of the proposed solution. Fill in the missing elements below (**three** actors and **three** Use Cases).



6 marks

Question 4

Khalil is proposing that the new App be a rich client application that connects to the network back at the office via a VPN. Jill does not understand why this is necessary, but Khalil explains that it will ensure compliance with the Privacy legislation.

a. What aspect of the Privacy legislation is Khalil concerned about in this instance?

1 mark

b. List **two** reasons why the set up proposed by Khalil will ensure compliance.

Reason 1 _____

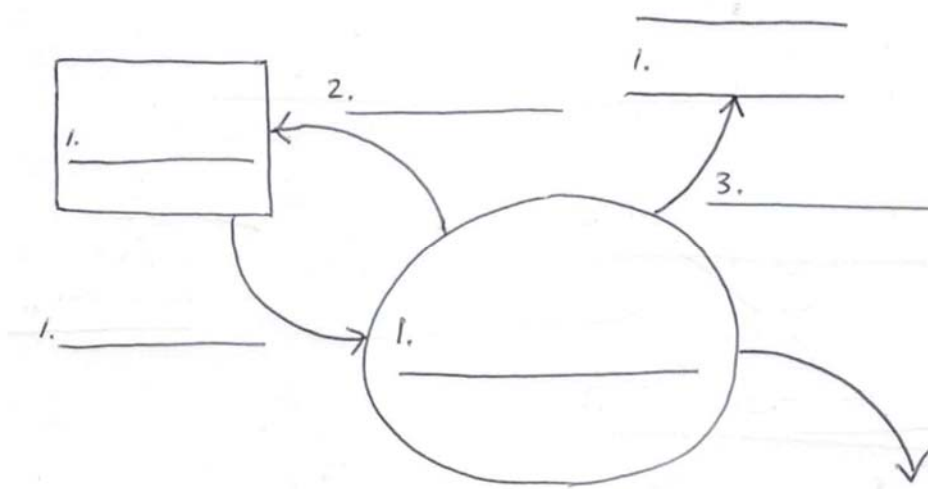
Reason 2 _____

2 marks

**SECTION C – continued
TURN OVER**

Question 5

The diagram below represents part of a DFD that Khalil is preparing for the proposed software solution. Fill in the names of the missing elements (**one** process, **one** entity, **one** data store and **three** data flows).



6 marks

Question 6

Khalil is considering different data structures within the software solution to store the data that is to be gathered.

a. What is a data structure?

1 mark

b. Khalil is deciding between using a record data structure and a simple 1D array. Which of these would be the better choice? Give **two** reasons to support your choice.

Choice: _____

Reason1: _____

Reason : _____

2 marks

SECTION C – continued
TURN OVER

Question 7

Khalil has written an algorithm that will go through the list of the plants (stored in a 1D array) and through the list of materials (also stored in a 1D array) in order to calculate the total cost.

These are the variables that he has defined:

Plant_lookup(plant_id, quantity): is a function that returns the cost of a plant based on its quantity.

Material_lookup(material_id, quantity): is a function that returns the cost of a material based on its quantity.

Plant(..): is an array that stores all of the plant selections made for the quote.

PQuantity(..): is an array that stores all of the quantities for the plants selected.

Material(..): is an array that stores all of the material selections made for the quote.

MQuantity(..): is an array that stores all the quantities for the materials selected.

Number_Plnts: is an integer that holds the number of plants in the quote

Number_Materials: is an integer that holds the number of materials in the quote.

Def Calculate_Final_Cost

Plant_index ← 1

Total ← 0

While Plant_Index <= Number_Plants do

Plant_Index ← Plant_Index + 1

Total ← Total + Plant_Lookup(Plant(Plant_Index),PQuantity(Plant_Index))

End While

Material_index ← 1

Total ← 0

While Material_Index <= Number_Materials do

Material_Index ← Material_Index + 1

Total ← Total + Material_Lookup(Material(Material_Index),MQuantity(Material_Index))

End While

End Def

- a. When Khalil first tests the logic of the algorithm using a trace table, he finds that the total cost of the plants is under the value that it should be. Why is that the case and what should he do to fix it?

Errr: _____

Correctin: _____

2 marks

- b. Khalil also finds that the total after the materials have been added is too small. Why is this the case and what should he do to fix it?

Erro: _____

Correctin: _____

2 marks

**SECTION C – continued
TURN OVER**

Question 8

The process of creating a quote for a potential client involves collecting some of their personal information.

- a. What would be the best way to ensure that this is collected in a way that doesn't contravene the Privacy legislation?

1 mark

- b. Jill sees an excellent opportunity to add data that is collected during the quoting process to the **Jill's Green Thumbs** marketing database. This database is used to send out marketing materials on a regular basis via both email and the post. Explain **two** things that would need to be done to allow this to occur legally?

: _____

: _____

2 marks

Question 9

Khalil arranges the Plant() and Material() arrays so that they can be binary searched. The Plant() array has 400 elements while the Material() array has 200.

- a. What would be the maximum number of comparisons required to find a plant in the Plant() array and to find a material in the Material() array?

Plant: _____

Material: _____

2 marks

- b. Describe how a new element could be added to either the Plant() or Material() arrays?

2 marks

SECTION C – continued
TURN OVER

Question 10

Jill sits down with Khalil and the other staff members of **Jill's Green Thumbs** to discuss the progress of the App. Khalil says that he is about to work on some designs for the interface and wants feedback on the following characteristics. In the table below, suggest a feature of the user interface for each category.

Clear	
Responsive	
Familiar	
Efficient	
Forgiving	

5 marks

Question 11

Khalil is concerned about the devices that will be used by Jill and Amari in the field.

- a. List three threats to these devices.

1: _____

2: _____

3: _____

3 marks

- b. Jill is in favour of locking the devices with a common password (such as 'JGT') while Khalil wants to use the build in finger-print scanner that the devices have. Discuss the merits of each approach.

2 marks

SECTION C – continued
TURN OVER

Question 12

Khalil takes leave on short notice to fly to Mexico to watch the Raiders play the Patriots on Monday Night Football. While there, he falls victim to a severe stomach bug and cannot fly back home for several weeks. Amari, who did some coding while in high school, receives some guidance from Khalil over the phone, and decides that he will keep the project moving along. With no internal documentation present and no clearly defined naming convention for variables or subroutines, Amari changes existing code and adds new code as required.

Describe **two** difficulties that Khalil might encounter with the code on this return.

1 _____

2 _____

2 marks

Question 13

Khalil has now returned and Amari is keen to test the App using live data. He proposes that while Jill continues to do paper based quotes for the jobs she is quoting on, he can begin to use the App and see how it works in the field.

Discuss the pros and cons of this proposal.

2 marks

**SECTION C – continued
TURN OVER**

Question 14

Amari reports back to Khalil about some aspects of the system's operation that need improving or modifying. For each of the points raised below, suggest a solution that could be implemented.

Mobile signal is sometimes not strong enough to download the map or transmit the quote to the office (and the client)	
In a whole day of operation, Amari found that the battery life of the tablet PC he was using was not adequate.	
Amari found that once he had added plants to the quote and proceeded to the next step, he could not go back.	
On one occasion, Amari dropped the tablet PC cracking the screen.	

4 marks

Question 15

The App has been in operation for 3 months and appears to be working well. Outline a strategy that could be used to evaluate the App and determine how successful it has been and what needs to be done moving forward.

4 marks

END OF QUESTION AND ANSWER BOOK

Insert for Section C – Case study

Please remove from the centre of this book during reading time.

TURN OVER

The existing system

Jill's Green Thumbs is a garden maintenance and landscaping company that has been in operation since the start of 2016. The business is owned by Jill Cooper, a landscape gardener, and has four other employees. John manages the accounts, Amari helps Jill with the gardening and is also a qualified landscape gardener. Khalil is an IT consultant who has been contracted by Jill to assist with the IT side of the business. Khalil initially set up the network at the office and purchased and configured the devices that Jill and Amari use off-site. Khalil manages the web-site and deals with any IT issues day to day.

At their annual meeting in January (after the Christmas break), Jill pitched an idea for an App that Amari and herself could use at client's homes that would allow them to quote on a job and share this information with the client as soon as the quote was completed. Khalil began work on the App right away.

To begin the process, Khalil sat down with Jill and Amari to work out what the requirements of the App would be.

This is what was decided:

- The App would be used to enter the client's information (full name, address, contact phone number and email address)
- The App would use location services to pin-point the exact map location, allow the user to zoom this map in and/or re-position it, and then take a snap-shot of it so that it could be annotated as required.
- The App would allow the user to take photos and add these to the detail of the quote.
- The App would allow the user to connect to the Jill's Green Thumb's database that has a list of all of the plants and materials that they can source and the cost for each.
- The App would allow the user to create sketches as needed.
- At the conclusion of the quote preparation, a pdf report of the quote would be emailed to the client as well as to the office for filing.

Sample Exam, 2017: Solutions and Teacher Notes**SECTION A – Multiple choice questions****Question 1**

Answer: C

Objectives are always quantifiable as opposed to goals which are broad statements.

Question 2

Answer: D

Standard definition from the PSM. Ensure that you are familiar with all the stages as well as all of the activities in the PSM.

Question 3

Answer: B

Question 4

Answer: B

Question 5

Answer: A

Note that option C is close – but the first input (11) would result in a nothing being displayed and the user being prompted to enter the number again.

Question 6

Answer: C

The algorithm is poorly designed. If the user enters an 11, it prompts them to enter the number again. If they then enter a 7, the until condition drops them out of the algorithm without any message saying that they have won.

Question 7

Answer: D

Question 8

Answer: A

Question 9

Answer: B

Answer A may well be true, but a better description of what a VPN provides is in answer B.

Question 10

Answer: B

Question 11

Answer: C

Question 12

Answer: D

Question 13

Answer: A

Question 14

Answer: B

Question 15

Answer: C

Even though a flood could be as a result of an accident, events such as fires, floods, earthquakes or power failures are considered to be event based threats.

Question 16

Answer: D

Use Case Diagrams do not depict data flows but rather the associations that actors have with use cases (processes).

Question 17

Answer: D

These are the three building blocks of any algorithm. More complex structures / techniques such as recursion are still built from these three basic structures.

Question 18

Answer: C

Speed is part of what makes an interface responsive – but it is also about how well the interface communicates with the user.

Question 19

Answer: B

Question 20

Answer: C

SECTION B – Short-answer questions**Question 1**

Answer: Development

Validation is one of the activities in the Development stage in the PSM definition.

Question 2

- a. The arrows are dependencies and they indicate that one task needs to be completed before the next can begin.
- b. 4 days
- c. Monday (as Task 3.1 would then cross over the weekend).

Question 3

Item	Functional or Non-functional
How easy it is to use the software.	Non-functional
The outputs that the software will generate.	Functional
How long the software can perform its' required functions.	Non-functional
How easily the software solution can be maintained.	Non-functional

Functional requirements are directly related to what the software solution is required to do – that is – what inputs it will receive, what outputs it will generate and how it will behave.

Question 4

Method 1: Brainstorming – ideas are written down as they are offered and then the group goes through them critically.

Method 2: DeBono's six thinking hats – a group brainstorming session is structured by focusing everyone on facts (white hat) firstly and then moving through a number of phases.

Recommend: A complex issue such as crime in a local area might be well served by having a discussion using DeBono's thinking hats. This way the discussion can remain focused at all times.

There are a number of possible answers here. The two methods could include mind mapping or some other method of generating design ideas. The method that is recommended is also not important – the focus is on explaining why the method chosen would be a good choice.

Question 5

1. Hardware could be stolen or misplaced.
2. An employee could make a mistake that results in data being deleted.

Another possible response is that an employee could save a data file in the wrong format.

Question 6

- a. $A = 7, B = 6$
- b. The while loop will be executed 7 times and “Time elapsed 70 seconds” will be displayed when it is finished.

No matter how confident you may feel with an algorithm question, always draw a trace table and map the variable values out on paper. Algorithm questions are done (on the whole) quite poorly in the exam, so getting questions like this one correct can be helpful in separating yourself from those students.

Question 7

- a. Deskillling is when the skills that an employee currently has (or uses) are made redundant with the introduction of a new system or technology.
- b.
 1. Retrain the new employee so that they have a role in the new system.
 2. Involve the affected employees in the design process so that they can have input into what happens as well as have a good idea about the changes that are coming.

SECTION C – Case Study**Question 1****a.**

Efficiency	Measure 1: Complete the quote quickly Measure 2: Complete the quote easily
Effectiveness	Measure 1: Complete a quote for a client Measure 2: Send a copy of the quote to both the office and the client

Scope defines what the solution will do as well as what it won't do. It defines what the boundaries of the solution will be and what benefits there will be for users.

b.

1. Needs to be able to work remotely via a mobile network
2. Needs to be able to work on a mobile device (such as a tablet PC)
3. Quote needs to be prepared in a way that is compatible with the current quote and the systems used in the office (that will read the quote)

Other constraints could also be valid here.

Question 2

An SRS is a Software Requirements Specification. It is of benefit as it defines what the software solution needs to do and provides a reference point so that later on in the development, it can be referred to again (preventing 'scope creep' – for example).

Question 3

1. Client
2. Landscape Gardener
3. Office Admin / Accounts
4. Gather customer details / requirements
5. Prepare a quote
6. Produce final quote

Question 4

- a. Khalil is concerned about the protection of the data that is being collected.
- b. 1: The VPN is encrypted, so that data being transferred from the App to the office cannot be read by any third parties.
2: The rich client application will be storing data on the mobile device that is using the App – and the device itself can be locked down to ensure that this data cannot be accessed by anyone else.

The thinking behind the choice of the rich client application is that the App and all the data would be stored on the device as opposed to an Internet Application.

Question 5

Entity 1: Client

Data flow 1: Request for customer details

Data flow 2: Customer details

Data flow 3: Customer details and quote number

Data store 1: Quote file

Process 1: Gather customer details for quote

Question 6

- a. A data structure is a specialised way of organising and storing data.
- b. Choice: A record data structure would be the better choice.
Reason 1: A one dimensional array can only store 1 item per array element. The data that will need to be collected will be of a variety of data types and sizes, so will not fit into a single 1D array.
Reason 2: A 1D array does not make sense for the data that needs to be collected. How would the App know where each new 'set' of data began and how to find (or index) each set of data?

A 1D array would not work in the context of this App at all. The only potential way that 1D arrays could be used is to have a number of them in parallel, but clearly a record structure is the best option.

Question 7

- a. Error: This occurs because Plant_Index begins with an initial value of '1' and is immediately incremented at the beginning of the While Do loop (thus skipping the first plant).
Correction: Set the initial value of Plant_Index to '0'.
- b. Error: After the plants are totalled, the Total variable is reset to '0'
Correction: Remove the second Total ← 0 line.

This is a common logic error that can be found in exam questions - starting an index so that it skips the first one or finishes 1 before it reaches the end.

Question 8

- a. Inform the customer that their personal information is being gathered for the purposes of the quote and that it will not be used for any other purpose or shared without their permission (see part b!!).
- b.
 1. Customers would need to be asked if they are happy to have their name and contact details added to the Jill's Green Thumbs marketing database.
 2. The marketing system would need to include a feature that allows customers to opt out at any time.

Question 9**a.**

Plant() array: maximum number of comparisons would be 9

Material() array: maximum number of comparisons would be 8

b.

A new element would need to be added on to the end of the array (either the Plant() or Material() arrays) – so this would mean that the array would need to be large enough to allow this. Once this was done, the array would need to be sorted.

Question 10

Clear	Easy to work out how to follow through the steps to complete the quote.
Responsive	Works fast and gives feedback to the user as to what it is doing (or how much of the quote has been completed).
Familiar	Use standard icons such as a Google Map icon when referring to the location of the quote or a camera icon when the user wants to take photos of the garden or proposed work.
Efficient	The App moves through each step of the quote without any unnecessary information being gathered.
Forgiving	If a client makes a mistake and wants to select a different plant or material, the entry can be undone.

When answering questions such as this one, it can be easy to write generic answers. It is important to link your responses back to the case study as much as possible as this demonstrates that you can apply the knowledge you have learnt.

Question 11**a.**

1. Device could be lost or stolen.
2. Device could be subjected to adverse weather conditions or the effects of it being outside (for example: rain, water, dirt, mud, wind, dust).
3. Device could be dropped.

b. Using a simple password such as 'JGT' would mean that those using the devices could easily access them. There are only a small number of employees that would be taking quotes, so it should be easy to keep the password secure. The finger-print scanner could also be set up easily given the small number of employees that will be using the devices. This would have the added benefit of being much more secure, though dirty hands could be a potential issue.

The 'discuss' question stem asks you to consider the pros and cons of the choices on offer.

Question 12

1. If Amari is adding new code and changing existing code without documenting the changes using internal documentation, Khalil will have no idea what has been changed.
2. If no clear naming convention exists, Amari may create variables using a different convention or may introduce logic errors into the code by using variables that he thinks represent one thing but may represent another.

Question 13

Testing the App with live data will mean that Khalil and Jill will get good feedback on how the App performs in the field and responds to quotes / requests in real time. If the App does not function correctly, there is the danger that quotes will be calculated incorrectly and customers may be effected adversely. In addition to this, using a paper based quoting system parallel to the new App could mean that the office has difficulty in processing the incoming quotes the same way (there could be a flow on effect on the office which may lead to additional time and procedures).

Question 14

Mobile signal is sometimes not strong enough to download the map or transmit the quote to the office (and the client)	The App needs to be able to work offline – and receive an address input (so that the map can be loaded later on).
In a whole day of operation, Amari found that the battery life of the tablet PC he was using was not adequate.	An in-car charging system should be investigated, so that as Amari or Jill are driving from one client to another, the tablet PC can charge. Addition batteries (or a higher capacity battery) may be able to be purchased.
Amari found that once he had added plants to the quote and proceeded to the next step, he could not go back.	A function needs to be added that allows the person giving the quote to move backwards and forwards through the quote process.
On one occasion, Amari dropped the tablet PC cracking the screen.	Hard cases should be purchased that will protect the tablet PCs from the elements.

Question 15

The App should be compared to the specification as outlined in the SRS and evaluated per the criteria that were formed in the design stage. Clients could be asked for feedback on their experience – both while the quote was being done and once the quote was sent to them. John in the office can be interviewed in regards to how easy the data has been to deal with.