



ATAR course examination, 2018

Question/Answer booklet

APPLIED INFORMATION TECHNOLOGY

Please place your student identification label in this box

Student number: In figures

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In words

Time allowed for this paper

Reading time before commencing work: ten minutes

Working time: three hours

Materials required/recommended for this paper

To be provided by the supervisor

This Question/Answer booklet

Multiple-choice answer sheet

Number of additional
answer booklets used
(if applicable):

To be provided by the candidate

Standard items: pens (blue/black preferred), pencils (including coloured), sharpener,
correction fluid/tape, eraser, ruler, highlighters

Special items: nil

Important note to candidates

No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised material. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.

Structure of this paper

Section	Number of questions available	Number of questions to be answered	Suggested working time (minutes)	Marks available	Percentage of examination
Section One Multiple-choice	15	15	20	15	15
Section Two Short answer	8	8	40	46	25
Section Three Extended answer	1	1	50	33	20
Section Four Scenario	1	1	70	66	40
Total					100

Instructions to candidates

- The rules for the conduct of the Western Australian external examinations are detailed in the *Year 12 Information Handbook 2018*. Sitting this examination implies that you agree to abide by these rules.
- Answer the questions according to the following instructions.

Section One: Answer all questions on the separate Multiple-choice answer sheet provided. For each question, shade the box to indicate your answer. Use only a blue or black pen to shade the boxes. Do not use erasable or gel pens. If you make a mistake, place a cross through that square, then shade your new answer. Do not erase or use correction fluid/tape. Marks will not be deducted for incorrect answers. No marks will be given if more than one answer is completed for any question.
- Write your answers to the questions in Sections Two, Three and Four in this Question/Answer booklet.
- You must be careful to confine your answers to the specific questions asked and to follow any instructions that are specific to a particular question.
- Supplementary pages for planning/continuing your answers to questions are provided at the end of this Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued, i.e. give the page number.

Section One: Multiple-choice**15% (15 Marks)**

This section has **15** questions. Answer **all** questions on the separate Multiple-choice answer sheet provided. For each question, shade the box to indicate your answer. Use only a blue or black pen to shade the boxes. Do not use erasable or gel pens. If you make a mistake, place a cross through that square, then shade your new answer. Do not erase or use correction fluid/tape. Marks will not be deducted for incorrect answers. No marks will be given if more than one answer is completed for any question.

Suggested working time: 20 minutes.

1. Which of the following applications allows the user to multi-layer track edit, create text, add transitions and apply effects?
 - (a) graphical
 - (b) publishing
 - (c) sound
 - (d) video

2. Which of the following assists in securing data while it is being processed?
 - (a) anti-virus software
 - (b) applications software
 - (c) backup software
 - (d) management software

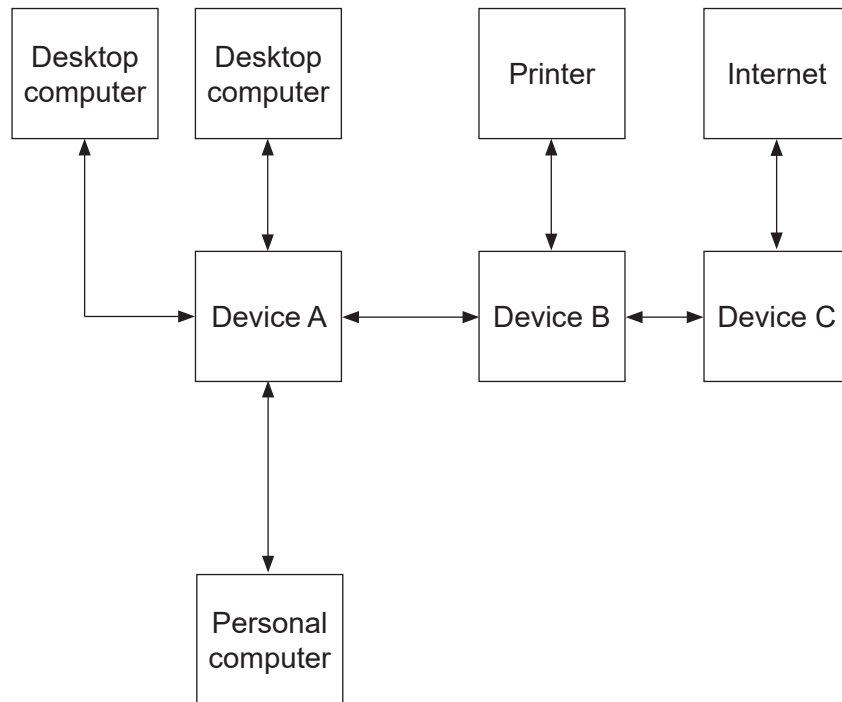
3. When analysing sources of information for verifiability, you are checking whether the source of the information is
 - (a) provable.
 - (b) useful.
 - (c) correct.
 - (d) comprehensible.

4. Which of the following are secondary colours?
 - (a) green, orange and purple
 - (b) red, orange and yellow
 - (c) blue, yellow and red
 - (d) yellow, green and purple

5. The purpose of intellectual property (IP) in Australia in relation to copyright of digital products is to
 - (a) register ideas on a database.
 - (b) provide an opportunity for ideas to be shared.
 - (c) protect the creator of an idea.
 - (d) ensure that an original idea is protected.

See next page

6. The diagram below is a simple Local Area Network (LAN).



Which of the following correctly identifies Devices A, B and C?

- (a) Device A: Router, Device B: Switch, Device C: Firewall
 - (b) Device A: Switch, Device B: Server, Device C: Router
 - (c) Device A: Router, Device B: Firewall, Device C: Switch
 - (d) Device A: Switch, Device B: Router, Device C: Server
7. Transmission Control Protocol (TCP) segments a message into smaller units called
- (a) Internet Protocol (IP).
 - (b) packets.
 - (c) blocks.
 - (d) data.
8. To ensure the authenticity and reliability of an email message, a digital signature can be used. A user's digital signature consists of a
- (a) physical signature.
 - (b) alphanumeric password.
 - (c) biometric key.
 - (d) personal mathematical key.

9. Sam is studying architecture at university and is planning to buy a new laptop to complete complex research, analyse data, produce reports for his assessments and render three-dimensional images. Which of the following computer specifications would be the **most** suitable for Sam?
- (a) i5 quad core at 2.8GHz, 4GB primary memory, 1TB secondary memory
 - (b) i5 dual core at 1.6GHz, 8GB primary memory, 128GB secondary memory
 - (c) i7 dual core at 2.8GHz, 8GB primary memory, 1TB secondary memory
 - (d) i7 quad core at 1.6GHz, 4GB primary memory, 2TB secondary memory
10. A company has evaluated the software it is using and decided that an update is required. Which of the following will **best** inform the company's purchasing decision?
- (a) technical support, budget allowance, add-in options, additional warranty
 - (b) technical support, training resources, additional warranty, usability
 - (c) hardware requirements, budget allowance, technical support, usability
 - (d) hardware requirements, add-in options, usability, training resources
11. Which of the following strategies enables a country to censor online information?
- (a) reducing bandwidth to slow the access of information
 - (b) blocking access to online information that can be viewed
 - (c) charging users to access the information online
 - (d) opening access to all online information that is external to the country
12. Which of the following publishing features will enhance a digital publication?
- (a) frames, layers, typography and templates
 - (b) timing, transitions, frames and templates
 - (c) transitions, layers, templates and colour schemes
 - (d) colour schemes, frames, timing and typography
13. A key provision of Freedom of Information (FOI) in Australia gives any person the right to
- (a) access copies of documents, including exempt documents.
 - (b) appeal against charges for searching and retrieving any non-personal documents.
 - (c) request that information held about them be changed if it is incorrect or misleading.
 - (d) make an appointment to inspect digital documents in private and make copies as required.

14. 802.3 is a specification that enables the
- (a) connecting of hosts on the internet.
 - (b) accessing of information over a physical LAN.
 - (c) interface between two wireless clients on a LAN.
 - (d) accessing of information over a mobile wireless network.
15. Fiona is redesigning a website for a local council. To ensure that her design for the interface meets the needs of the broader community, there must be relevant help features available. Which of the following would Fiona use to incorporate help features into the graphical user interface (GUI)?
- (a) publishing, accessibility and inclusivity features
 - (b) publishing features, User Experience (UX) and accessibility
 - (c) usability, accessibility and inclusivity features
 - (d) User Experience (UX), accessibility and inclusivity features

End of Section One

Section Two: Short answer**25% (46 Marks)**

This section has **eight** questions. Answer **all** questions. Write your answers in the spaces provided.

Supplementary pages for planning/continuing your answers to questions are provided at the end of this Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued, i.e. give the page number.

Suggested working time: 40 minutes.

Question 16**(3 marks)**

List **three** features of sound editing software.

One: _____

Two: _____

Three: _____

Question 17**(6 marks)**

Describe how **three** types of biometric technology can be used to ensure security in processing data.

One: _____

Two: _____

Three: _____

Question 18

(4 marks)

Describe **two** functions of a firewall.

One: _____

Two: _____

Question 19

(3 marks)

Outline **three** characteristics of the Wireless Application Protocol (WAP).

One: _____

Two: _____

Three: _____

Question 20**(9 marks)**

Consider the technical specifications given below for Device 1 and Device 2.

	Device 1	Device 2
Processor	1.0GHz dual-core	3.4GHz quad-core
Primary memory	512MB	8GB
Secondary memory	8GB	256GB

Explain how the specifications affect the usability of each device.

Processor:

Primary memory:

Secondary memory:

See next page

Question 21

(8 marks)

(a) Describe the **three** online data storage methods listed below.

(6 marks)

Data warehouse: _____

Data mart: _____

Data in the cloud: _____

(b) Provide **two** reasons why an organisation would use data mining.

(2 marks)

One: _____

Two: _____

Question 22

(9 marks)

(a) Describe the **three** types of backup techniques listed below.

(6 marks)

Full: _____

Differential: _____

Daily: _____

(b) In the event of a full system restore, explain why a full backup is faster than an incremental backup.

(3 marks)

Question 23

(4 marks)

Describe **two** techniques that can be used to ensure the validity of data entered by a user when completing an online form.

One: _____

Two: _____

End of Section Two

See next page

Section Three: Extended answer**20% (33 Marks)**

This section contains **one** question. Write your answers in the spaces provided.

Supplementary pages for planning/continuing your answers to questions are provided at the end of this Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued, i.e. give the page number.

Suggested working time: 50 minutes.

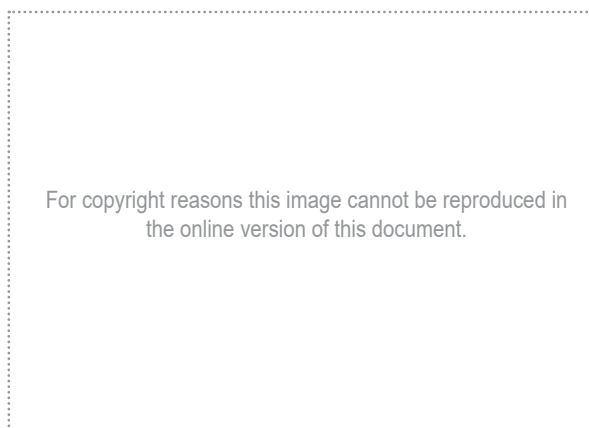
Question 24**(33 marks)**

Read the article excerpt on page 14, which focuses on an emerging mobile digital device that is having an impact on the sports science industry.

Question 24 (continued)

STATSports: The training technology used by Arsenal, Manchester City, Barcelona and more

STATSports, have become a pioneering influence in the sports science industry, with their player tracking and analysis equipment being used by 14 Premier League clubs, a host of international teams and European giants such as Barcelona and Juventus.



Barcelona's Lionel Messi wearing a Viper pod in the opening weeks of last season.

The key component of the system is the Viper pod, a matchbox-sized GPS device which sits between the shoulder blades, where it monitors heart rate and measures various aspects of physiological performance. The black vests which hold them in place have become a common sight on training grounds up and down the country, and the pods can be worn during matches too.

Richard Bryne, head of business development at STATSports, explains how it works. 'Its function is to collect all of a player's performance data', Bryne tells Sky Sports. 'That means basic things like distance covered and running speed, but also more in-depth metrics we have developed such as step balance and stress loads, really intricate details on performance, fitness and wellbeing.'

The pods collect vast quantities of data which is picked up by an antenna at the side of the pitch and processed by STATSports software. Coaching staff then use the live stats to monitor performance, allowing them to compile reports and make informed decisions on what players should and shouldn't be doing on the pitch.

Sunderland is one of the Premier League clubs using the equipment. 'We use it every day, in every session', their team sports scientist Paul Walsh tells Sky Sports. 'It is quite an integral part of the whole backroom team's work. The GPS gear has just become part of the players' kit for training now', adds Walsh.

The technology allows clubs like Sunderland to tailor their players' workloads individually and fine-tune their training through the week. As well as heart rate and distance covered, Sunderland use the equipment to monitor metrics such as high speed running, acceleration and deceleration.

'It's very quick and easy to use', he says. 'Within 15 minutes of training we've got a report upstairs to the coaching staff and the medical team. So everyone will have an idea how hard each session was for the player. That will support decisions that are being made throughout the week.'

The technology is also used to assess whether players are at risk of exacerbating a fitness issue. 'We look out for abnormalities or sudden spikes in the data', says Walsh. 'That might be a little red flag to raise a conversation with a player or the medical team.' The idea is to prevent soft-tissue injuries. One of STATSports' major European clients cut their total of such injuries from 44 to just 22 in the year they started using the equipment.

For the players it all adds up to constant scrutiny. 'There's certainly no hiding place in football anymore, because everything is analysed so much', says Walsh, who adds that the Sunderland squad have embraced the technology wholeheartedly.

'They have really bought into it', he says. 'They are all really interested in what they do, for instance, who got the quickest speed. It does make your life easier when you have that buy-in from the players. We use it to push them on.'

- (a) List **three** examples of convergence evident in the Viper pod. (3 marks)

One: _____

Two: _____

Three: _____

- (b) Explain **three** ways in which the Viper pod is meeting the needs of the Premier League clubs. (9 marks)

One: _____

Two: _____

Three: _____

Question 24 (continued)

- (c) Explain **two** ways in which a club might benefit by using Web 3.0 technology in conjunction with the data from the Viper pod. (6 marks)

One: _____

Two: _____

- (d) Describe **three** ways in which a Premier League club could ensure that the data collected on their players is secure. (6 marks)

One: _____

Two: _____

Three: _____

- (e) Explain **two** concerns that a player might have if their club decided to store the data collected on them in the cloud. (6 marks)

One: _____

Two: _____

- (f) Outline **three** reasons why one of the Premier League clubs might outsource the management of its player data. (3 marks)

One: _____

Two: _____

Three: _____

End of Section Three

See next page

Section Four: Scenario

40% (66 Marks)

This section contains **one** question. Write your answers in the spaces provided.

Supplementary pages for planning/continuing your answers to questions are provided at the end of this Question/Answer booklet. If you use these pages to continue an answer, indicate at the original answer where the answer is continued, i.e. give the page number.

Suggested working time: 70 minutes.

Question 25

(66 marks)

An Australian State government has decided to introduce a scheme called the 'Super Solar Scheme'. This scheme will provide 100 000 householders in the State with free solar panels and batteries. The aim of the scheme is to reduce household power bills and supply extra electricity to the power grid on a large scale.

The government has a set timeline and plan to announce the scheme to the public in May 2019. They want to raise awareness and provide the public with information about the scheme. The government has contracted you to design a digital solution to promote the scheme and enable householders to register for the scheme. Your digital solution is to be completed and ready for release to the public by April 2019. As part of your contract, you are required to provide regular progress reports and evidence of cost control.

The digital solution will consist of a website and a mobile application (app) for the scheme.

You are required to design the homepage of the website. It must include:

- information about the scheme
- an application for householders to register for the scheme
- external links to **two** government websites providing other information including:
 - research documents on solar power
 - contacts for renewable energy.
- user-generated content feature/s to collect data relevant to the scheme
- a help feature that enables accessibility.

You are also required to design the landing page (first page) of the app. It must include:

- information about the scheme
- an application for householders to register for the scheme
- external links to **two** government websites providing other information including:
 - research documents on solar power
 - contacts for renewable energy.
- a help feature that enables accessibility.

- (a) Given the client requirements for this brief, identify the project management approach you would use and outline why. (3 marks)

- (b) Explain how you will incorporate User Experience (UX) and User Interface (UI) in the design of your website homepage and app landing page. (4 marks)

Question 25 (continued)

- (c) Explain **two** ways in which you will use project management software to meet the requirements of the design brief. (6 marks)

- (d) In designing the homepage for the government website, you must consider the World Wide Web Consortium (W3C) conventions and standards.

- (i) Outline the purpose of the W3C conventions. (2 marks)

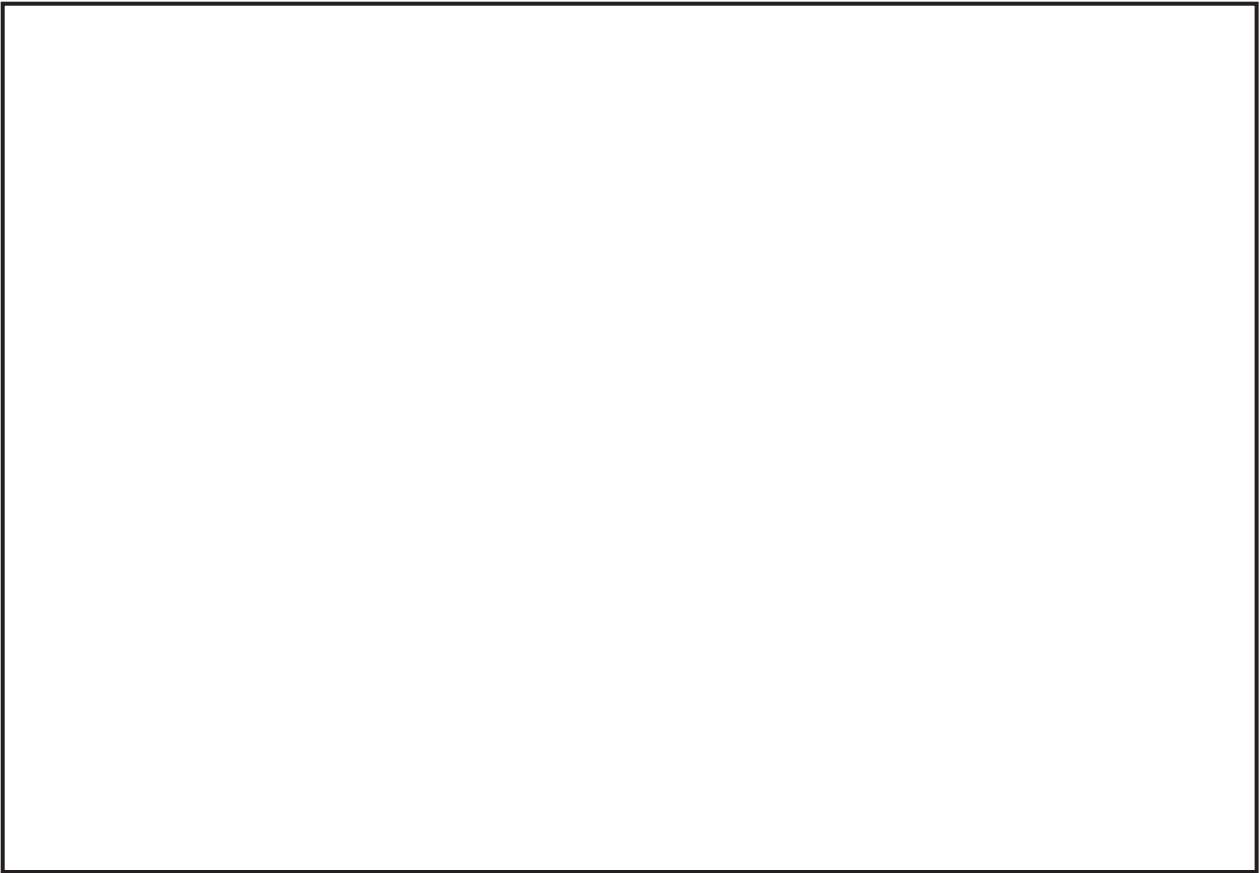
Question 25 (continued)

- (e) Design the homepage of the 'Super Solar Scheme' website in the space provided on page 23. You may use the space below to plan your response.

Your design must include annotations and show:

- (i) layout and structure of your intended design (5 marks)
- (ii) elements and principles of design used and the relationship between them (3 marks)
- (iii) organisation of content suitable for the given digital medium (3 marks)
- (iv) user-generated content feature/s suitable for the given digital medium (2 marks)
- (v) a help feature that enables accessibility. (2 marks)

Planning: anything written on this page will **not** be marked.



See next page

Question 25 (continued)

- (f) Describe **two** ways in which the government will benefit from having user-generated content feature/s on the homepage of the website. (4 marks)

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See next page

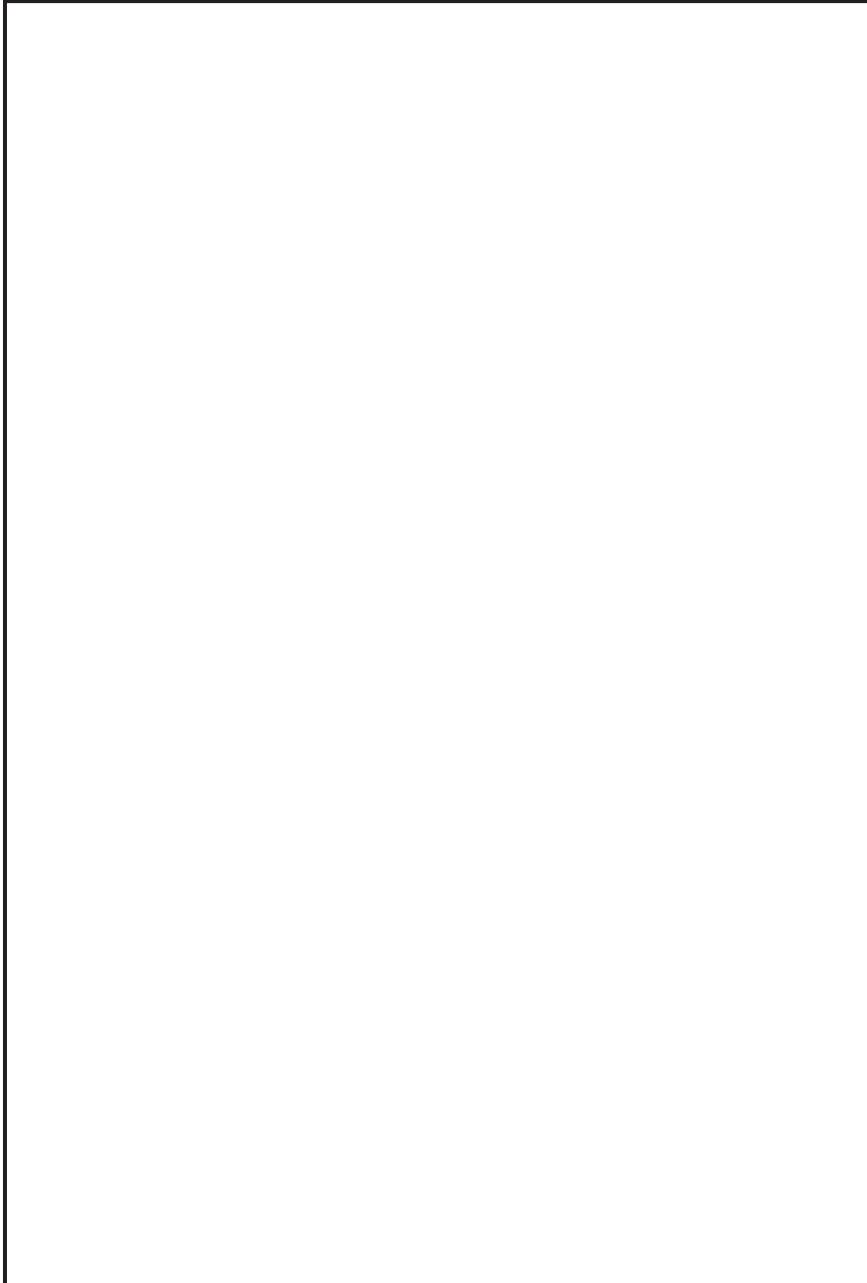
Question 25 (continued)

- (g) Design the landing page (first page) of the app called 'Super Solar Scheme' in the space provided on page 27. You may use the space below to plan your response.

Your design must include annotations and show:

- (i) layout and structure of your intended design (5 marks)
- (ii) elements and principles of design used and the relationship between them (3 marks)
- (iii) organisation of content suitable for the given digital medium (3 marks)
- (iv) navigation controls suitable for the given digital medium (3 marks)
- (v) a help feature that enables accessibility. (2 marks)

Planning: anything written on this page will **not** be marked.



See next page

Question 25 (continued)

- (h) Describe how you would incorporate **two** inclusivity features in the design of the landing page of the app. (4 marks)

- (i) Explain how you will use **one** tool to evaluate the effectiveness of your digital solution in accordance with the design brief. (3 marks)

Supplementary page

Question number: _____

ACKNOWLEDGEMENTS

- Question 24** Article adapted from: Wright, N. (2016). *STATSports: The training technology used by Arsenal, Man City, Barcelona and more*. Retrieved May, 2018, from <http://www.skysports.com/football/news/11095/10502787/statsports-the-training-technology-used-by-arsenal-man-city-barcelona-and-more>
- Photograph from: AFP. (n.d.). *Barcelona's Lionel Messi wore a Viper Pod in the opening weeks of last season*. Retrieved from <http://www.skysports.com/football/news/11095/10502787/statsports-the-training-technology-used-by-arsenal-man-city-barcelona-and-more>
[Adapted]
- Question 25** Introductory text concept from: AAP. (2018, February 4). SA govt launched plan for solar network. *The West Australian*. Retrieved July, 2018, from <https://thewest.com.au/politics/sa-govt-launched-plan-for-solar-network-ng-s-1825740>

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