



APPLIED INFORMATION TECHNOLOGY

ATAR course examination 2018

Marking Key

Marking keys are an explicit statement about what the examining panel expect of candidates when they respond to particular examination items. They help ensure a consistent interpretation of the criteria that guide the awarding of marks.

Section One: Multiple-choice

15% (15 Marks)

Question	Answer
1	d
2	a
3	a
4	a
5	d
6	b
7	b
8	d
9	c
10	c
11	b
12	a
13	c
14	b
15	c

Section Two: Short answer

25% (46 Marks)

Question 16

(3 marks)

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

Description	Marks
Any three of:	
<ul style="list-style-type: none"> • manipulate/change pitch • manipulate/change speed • manipulate/change tempo • boost or cut frequencies • set to a uniform volume/volume control • have background noise or interference reduced • special effects – echo, fade in/out • voice over • multi-layer track editing • transitions • sound effects 	1–3
Total	3
Accept other relevant answers.	

Question 17

(6 marks)

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

Description	Marks
For each of the three types of biometric technology:	
Describes how it can be used to ensure security in processing data.	2
Identifies a type of biometric technology that can be used to ensure security in processing data.	1
Total	6
Answers could include: <ul style="list-style-type: none"> • fingerprint authentication – to access a mobile device e.g. accessing a smartphone • voice recognition – to access a restricted room or to access a device e.g. engaging Siri or Cortana in a search • facial recognition – to access a restricted area e.g. entry to a research laboratory • eye/retina scan– to access a restricted area e.g. entry to a research laboratory 	
Accept other relevant answers.	

Question 18

(4 marks)

Describe **two** functions of a firewall.

Description	Marks
For each of the two functions:	
Describes a function of a firewall.	2
Identifies an aspect of a firewall.	1
Total	4
Answers could include: <ul style="list-style-type: none"> • allow/deny/block/monitor traffic – by applying access rules to limit traffic from inside to outside, or allow traffic from outside to inside of the network • provides a protection function – by examining the traffic that is entering into the network and checks identity and access privileges before letting you in • enables threat detection – by detecting activity that might be related to an attack, such as a DoS attack, and automatically sends a system log message • controls request direction – by determining the direction in which particular service requests may be allowed to flow through the firewall • filters malicious data – by following the set of rules that control incoming and outgoing data. 	
Accept other relevant answers.	

Question 19

(3 marks)

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

Description	Marks
Any three of:	
<ul style="list-style-type: none"> • simplifies the receipt of internet content to wireless devices • standardises the way that wireless/mobile devices, such as cellular telephones and radio transceivers, can be used for internet access, including email, the World Wide Web, newsgroups, and instant messaging • enhances wireless specification interoperability • supported by all operating systems. 	1–3
Total	3
Accept other relevant answers.	

Question 20

(9 marks)

Explain how the specifications affect the usability of each device.

Description	Marks
For each of the three specifications:	
Explains how the specification affects the usability of Device 1 and Device 2.	3
Makes general comment/s about the specification and how it affects the usability of Device 1 and/or Device 2.	2
Identifies aspects of how the specification affects the usability of Device 1 and Device 2.	1
Total	9
Answers could include:	
<ul style="list-style-type: none">• processor – Device 1 has a slower processing speed with a dual core and Device 2 has a higher processing speed with a quad core; therefore Device 2 will complete tasks at a faster rate than Device 1; Device 1 may freeze, load applications slower or be unstable• primary memory – Device 1 has a smaller RAM with 512MB and Device 2 has 8GB; therefore Device 2 can temporarily store instructions to process operations more quickly whereas Device 1 has limited space to load software• secondary memory – Device 1 has a smaller secondary storage space with 8GB and Device 2 has 256GB; therefore Device 2 will be able to store larger and more data files than Device 1; Device 1 may require an external hard drive or access to cloud storage to store files.	

Question 21

(8 marks)

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

(6 marks)

Description	Marks
For each of the three methods:	
Describes the online data storage method.	2
Identifies an aspect of the online data storage method.	1
Total	6
Answers could include the: <ul style="list-style-type: none"> • data warehouse – to store all of an organisation’s data into a central repository so that data can be shared with different stakeholders for analysis and decision-making purposes • data mart – to look at specific data in order to meet the demands of a specific group of users within the organisation • data in the cloud – to allow users to use online storage solutions for their data for many benefits including disaster recovery, data backup and archiving. 	
Accept other relevant answers.	

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

(2 marks)

Description	Marks
Any two of:	
<ul style="list-style-type: none"> • to identify interesting and useful patterns and relationships in large volumes of data • to identify and predict patterns based on trends and behaviour analysis • to identify relationships between price, product and customer demographics • to determine impacts on sales, customer satisfaction and profits. 	1–2
Total	2
Accept other relevant answers.	

Question 22

(9 marks)

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

(6 marks)

Description	Marks
For each of the three backup techniques:	
Describes the backup technique.	2
Identifies an aspect of the backup technique.	1
Total	6
Answers could include: <ul style="list-style-type: none"> • full – All data/files are copied from its original location to another location for use if needed. • differential – copies files that have changed since the last full backup occurred • daily – copies all selected files that have been modified the day the daily backup is performed. Every single file should have full recovery up to when the last daily backup was completed. 	
Accept other relevant answers	

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

(3 marks)

Description	Marks
Explains why a full backup is faster than an incremental backup.	3
Makes general comments about why a full backup is faster than an incremental backup.	2
Identifies an aspect of a full backup or an incremental backup.	1
Total	3
Answers could include: <ul style="list-style-type: none"> • a full backup consists of a complete copy of all data available on a single set of media, resulting in minimal time to fully restore data • incremental backups would be stored on multiple sets of media. It will take longer to locate and access all required files to complete a full restore. 	
Accept other relevant answers.	

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.

Description	Marks
For each of the two data validation techniques:	
Describes a technique that can be used to ensure the validity of data entered by a user when completing an online form.	2
Identifies a technique that can be used to ensure the validity of data entered by a user when completing an online form.	1
Total	4
<p>Answers could include:</p> <ul style="list-style-type: none"> • required fields – validation to ensure that the user provides all necessary details in the web form and it has to fail if one of the fields is not provided. Usually indicated with an asterisk • correct format – validation has to ensure that users provide information in the correct format. This applies to various cases such as email address, URL, dates, phone numbers and others. If information is not in the correct format, users should be informed and correct format should be suggested • confirmation fields – validation that lets the users confirm their input using additional confirmation fields. This way users can be certain that they provided correct information. A typical case when the confirmation field is used is for passwords, but it can be used in other cases like an email address. 	
Accept other relevant answers.	

Section Three: Extended answer

20% (33 Marks)

Question 24

(33 marks)

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

Description	Marks
Any three of:	
<ul style="list-style-type: none"> collection of multiple health data (e.g. heart rate, stress loads, distance covered) through one device monitoring of metrics such as high-speed running, acceleration and deceleration collection of statistics in real-time from multiple data sources compilation of reports (using the data) to make informed decisions in real-time the GPS records the distance that a player has covered in training or during a match candidates may list isolated examples, e.g. heart rate monitor, GPS, speedometer. 	1–3
Total	3
Accept other relevant answers.	

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

Description	Marks
For each of the three ways:	
Explains a way in which the Viper pod is meeting the needs of the Premier League clubs.	3
Makes general comment/s about the way in which the Viper pod is meeting the needs of the Premier League clubs.	2
Identifies a way in which the Viper pod is meeting the needs of the Premier League clubs.	1
Total	9
Answers could include:	
<ul style="list-style-type: none"> coaching staff can use the live statistics to monitor player performance to compile reports and make informed decisions on players to determine the best team for matches medical teams can assist in monitoring the players using the live statistics and can assess whether players are at risk of exasperating a fitness issue coaching staff could increase competition between players by comparing and using training statistics. 	
Accept other relevant answers.	

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)

Description	Marks
For each of the two ways:	
Explains a way in which a club might benefit by using Web 3.0 technology in conjunction with data from the Viper pod.	3
Makes general comments about a way in which a club might benefit by using Web 3.0 technology in conjunction with data from the Viper pod.	2
Identifies a way in which a club might benefit by using Web 3.0 technology in conjunction with data from the Viper pod.	1
Total	6
Answers could include: <ul style="list-style-type: none"> enables more effective communication between players and management to assist in player fitness/health, participation in training and matches improves awareness of player performance and the impact of any health/physical issues so that players bodies are not over-stretched improves engagement with players to increase competitiveness and determine best playing position in matches. 	
Accept other relevant answers.	

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

Description	Marks
For each of the three ways:	
Describes a way in which a Premier League club could ensure that player data is secure.	2
Identifies a way in which a Premier League club could ensure that player data is secure.	1
Total	6
Answers could include: <ul style="list-style-type: none"> password – ensuring that only those with authenticated access will be able to view player data firewall – restricting access to networked devices where player data is stored, reducing the possibility of hacking anti-virus software – protecting player data from corruption/loss encryption – protecting the transmission of player data if sharing player data online or via email. 	
Accept other relevant answers.	

- (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)

Description	Marks
For each of the two concerns:	
Explains a concern that a player may have if their data is stored in the cloud.	3
Makes general comment/s about a concern that a player may have if their data is stored in the cloud.	2
Identifies a concern that a player may have if their data is stored in the cloud.	1
Total	6
Answers could include: <ul style="list-style-type: none"> • security – possibility of hackers accessing player data; players would have a lack of control over their own data if outsourced to a third party online; where the server is located and the security/privacy laws of that country • confidentiality – some data may be personal or private and players would have no or limited control of their data and who can access it • level of accessibility – who can access, modify, save data files stored online; any downtime of the cloud storage. 	

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

Description	Marks
Any three of:	
<ul style="list-style-type: none"> • relieve pressure on storage capacity and ICT resources while reducing costs • enable quicker analysis of results when managed by data experts which will assist with decision-making • make reporting and metrics readily available for improved player and game-play strategies • ensure access to most appropriate technology as clubs may not have the resources to store large volumes of data. 	1–3
Total	3
Accept other relevant answers.	

Section Four: Scenario

40% (66 Marks)

Question 25

(66 marks)

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

Description	Marks
Project management approach:	
Structured	1
Subtotal	1
Reason for choice:	
Outlines why a structured approach should be used for this brief.	2
Makes superficial comments about why a structured approach should be used for this brief.	1
Subtotal	2
Total	3
Answers could include: <ul style="list-style-type: none"> • anticipated tasks are provided for the project therefore it requires organisation • a finish date is given, and a structured approach gives better control on finishing time. 	
Accept other relevant answers.	

- (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)

Description	Marks
Explains how they will incorporate UX and UI in the design of the website homepage and app landing page.	4
Identifies some aspects of incorporating the UX and UI in the design of the website homepage and app landing page.	3
Makes general comments about how they will incorporate UX and/or UI in the design of the website homepage and/or the app landing page.	2
Makes superficial comments about how they will incorporate UX or UI in the design of the website homepage and/or app landing page.	1
Total	4
Answers could include: <ul style="list-style-type: none"> • UX – easy to use and enjoyable so that users return to the site; design to previous experiences. For example, a menu system, contact details in similar location; most important features are easiest to find • UI – user friendly; buttons; provide hints and tips; provide a Frequently Asked Questions facility. 	
Accept other relevant answers.	

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

Description	Marks
For each of the two ways:	
Explains a way in which they will use project management software to meet the requirements of the design brief.	3
Makes general comment/s about a way they will use project management software to meet the requirements of the design brief.	2
Identifies a way to use project management software.	1
Total	6
Answers could include: <ul style="list-style-type: none">• timeline – to create/produce scheduling of tasks within the project ensuring a logical sequence of tasks to produce a successful solution• budgeting – to monitor/control costs and budget, producing evidence of cost control to ensure the project is delivered within budget• reporting – to produce regular reports of progress, facilitating communication with the government.	
Accept other relevant answers.	

Question 25 (continued)

(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)

Description	Marks
Outlines the purpose of the W3C conventions.	2
Identifies an aspect of the W3C conventions.	1
Total	2
Answers could include: <ul style="list-style-type: none"> • promote consistency in the design code which makes up a web page • ensure the web is accessible to all users despite differences in culture, education, ability, resources and physical limitations. 	
Accept other relevant answers.	

(ii) Explain how your homepage will comply with **three** standards from the Web Design and Applications Standard of the W3C. (9 marks)

Description	Marks
Explains how a correctly identified standard can be applied to the homepage.	3
Makes general comments about how a standard can be applied to the homepage.	2
Identifies a standard from the W3C or makes superficial comments about how the standard can be applied to the homepage.	1
Total	9
Answers could include: <ul style="list-style-type: none"> • HTML and CSS – HTML used to code the structure of the homepage; CSS to allow the presentation of the homepage; design should be adaptable to different types of devices • graphics – ensure that the homepage optimises images for different audiences with different needs and expectations; use of SVG and PNG which is supported by most browsers • audio and video – use W3C formats and audio and video codecs that enable authoring audio and video presentations using HTML, SVG, and SMIL • accessibility – create content that is accessible to people with disabilities such as use of transcripts for podcasts or audio files, screen reader that reads aloud • internationalisation – the design should work across cultures and languages by using language translators/options, unit conversions for distances/costs • mobile web – keeping the layout simple and fluid for different screen sizes and resolutions; allowing input from any form of input device; limiting use JavaScript due to less processing power and memory. 	

- (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)

Description	Marks
Layout and structure of intended design	
Produces an effective drawing/representation of the homepage of the website and detailed, supporting annotations.	5
Produces an appropriate drawing/representation of the homepage of the website and some supporting annotations.	4
Produces a rudimentary drawing/representation of the homepage of the website and some relating annotations.	3
Produces a simplistic drawing of the homepage of the website and limited annotations.	2
Produces a limited drawing of the homepage of the website and inadequate or no annotations.	1
Total	5

- (ii) elements and principles of design used and the relationship between them (3 marks)

Description	Marks
Elements and principles of design used and the relationship between them	
Produces a design that indicates clearly the elements and principles of design used, the relationship between them and that includes supporting annotations.	3
Produces a design that features some of the elements and principles of design used, some description of the relationship between them and that includes some relating annotations.	2
Produces a design where some of the elements and principles of design have been used but the relationship between them is unclear and the design has inadequate or no annotations.	1
Total	3

- (iii) organisation of content suitable for the given digital medium (3 marks)

Description	Marks
Organisation of content suitable for the given digital medium	
Produces a design that features logical organisation of content for the given digital medium and supporting annotations.	3
Produces a design that shows some organisation of content for the given digital medium and some relating annotations.	2
Produces a design that shows limited organisation of content for the given digital medium and inadequate or no annotations.	1
Total	3

Question 25(e) (continued)

- (iv) user-generated content feature/s suitable for the given digital medium (2 marks)

Description	Marks
User-generated content feature/s suitable for the given digital medium	
Produces a design that includes effective user-generated content feature/s for the given digital medium and supporting annotations.	2
Produces a design that shows suitable user-generated content feature/s for the given digital medium but inadequate or no annotations.	1
Total	2

- (v) a help feature that enables accessibility. (2 marks)

Description	Marks
Help feature	
Produces a design that has a help feature that enables accessibility and that includes supporting annotations.	2
Produces a design that has a help feature that relates to accessibility but has inadequate or no annotations.	1
Total	2

- (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)

Description	Marks
For each of the two ways:	
Describes a way in which the government will benefit from having user-generated content feature/s on the homepage of the website.	2
Identifies a way in which the government will benefit from having user-generated content feature/s on the homepage of the website.	1
Total	4
Answers could include: <ul style="list-style-type: none"> enables feedback from users – users have a forum to express their thoughts and ask questions about the project allowing the government to respond to questions and make improvements to the project increase user engagement – consumers are more likely to support government projects when there is a level of ownership and involvement can build trust in the project – improves users' view of the government and belief in government policies and spending. 	
Accept other relevant answers.	

(g) Design the landing page (first page) of the app called 'Super Solar Scheme' in the space provided on page 27. Your design must include annotations and show:

(i) layout and structure of your intended design (5 marks)

Description	Marks
Layout and structure of design	
Produces an effective drawing/representation of the landing page of the app and detailed, supporting annotations.	5
Produces an appropriate drawing/representation of the landing page of the app and some supporting annotations.	4
Produces a rudimentary drawing/representation of the landing page of the app and some relating annotations.	3
Produces a simplistic drawing of the landing page of the app and limited annotations.	2
Produces a limited drawing of the landing page of the app and inadequate or no annotations.	1
Total	5

(ii) elements and principles of design used and the relationship between them (3 marks)

Description	Marks
Elements and principles of design used and the relationship between them	
Produces a design that indicates clearly the elements and principles of design used, the relationship between them and that includes supporting annotations.	3
Produces a design that features some of the elements and principles of design used, some description of the relationship between them and that includes some relating annotations.	2
Produces a design where some of the elements and principles of design have been used but the relationship between them is unclear and the design has inadequate or no annotations.	1
Total	3

(iii) organisation of content suitable for the given digital medium (3 marks)

Description	Marks
Organisation of content suitable for the given digital medium	
Produces a design that features logical organisation of content for the given digital medium and supporting annotations.	3
Produces a design that shows some organisation of content for the given digital medium and some relating annotations.	2
Produces a design that shows limited organisation of content for the given digital medium and inadequate or no annotations.	1
Total	3

Question 25(g) (continued)

- (iv) navigation controls suitable for the given digital medium (3 marks)

Description	Marks
Navigation controls suitable for the given digital medium	
Produces a design that features effective navigation for the given digital medium and supporting annotations.	3
Produces a design that shows some navigation controls suitable for the given digital medium and some relating annotations.	2
Produces a design that shows limited navigation controls for the given digital medium and inadequate or no annotations.	1
Total	3
Note: Navigation controls should include two links to the other government pages and links should open in a new tab not the same page.	

- (v) a help feature that enables accessibility. (2 marks)

Description	Marks
Help feature	
Produces a design that has a help feature that enables accessibility and that includes supporting annotations.	2
Produces a design that has a help feature that relates to accessibility but has inadequate or no annotations.	1
Total	2

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

Description	Marks
For each of the two inclusivity features:	
Describes how they would incorporate two inclusivity features in the design of the landing page of the app.	2
Identifies an inclusivity feature that they would incorporate in the design of the landing page of the app.	1
Total	4
Answers could include: <ul style="list-style-type: none"> • language selection – a set of flags or drop-down list of countries to select from, to change the language to be shown on the app • currency selection – a choice currency options and the site coded to show costs converted to the selected currency • responsive design – the app automatically adjusts to the orientation of the screen size being used. 	
Accept other relevant answers.	

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

Description	Marks
Explains how the tool will be used to evaluate the effectiveness of their digital solution in accordance with the design brief for this project.	3
Identifies an aspect of how the tool will be used to evaluate the effectiveness of their digital solution in accordance with the design brief for this project.	2
Identifies the tool they will use to evaluate the effectiveness of their digital solution in accordance with the design brief for this project.	1
Total	3
Answers could include: <ul style="list-style-type: none">• a survey of a sample group to get feedback on the digital solution• client feedback – give sample/prototype to client to get initial feedback• self-reflection – reflect on the design of the product to see if improvements could be made.	
Accept other relevant answers.	

ACKNOWLEDGEMENTS

- Question 23** Text under 'Answers could include' adapted from: Jovanovic, J. (2009). Web form validation: Best practices and tutorials. *Smashing Magazine*. Retrieved July, 2018, from <https://www.smashingmagazine.com/2009/07/web-form-validation-best-practices-and-tutorials/>
- Question 24(a)** Text under 'Any three of' adapted from: Wright, N. (2016). *STATSports: The training technology used by Arsenal, Man City, Barcelona and more*. Retrieved July, 2018, from <http://www.skysports.com/football/news/11095/10502787/statsports-the-training-technology-used-by-arsenal-man-city-barcelona-and-more>
- Question 24(b)** Text under 'Answers could include' adapted from: Wright, N. (2016). *STATSports: The training technology used by Arsenal, Man City, Barcelona and more*. Retrieved July, 2018, from <http://www.skysports.com/football/news/11095/10502787/statsports-the-training-technology-used-by-arsenal-man-city-barcelona-and-more>
- Question 25(d)(i)** Text under 'Answers could include' (2nd dot point) adapted from: Jordan. (2013, June 26). *The importance of W3C standards* [Web log post]. Retrieved July, 2018, from <https://www.bopdesign.com/bop-blog/2013/06/the-importance-of-w3c-standards/>
- Question 25(e)(v) & 25(g)(v)** Text under 'Answers could include' adapted from: Henry, S. L., Abou-Zahra, S., & White, K. (Eds). (2016). *Accessibility, usability, and inclusion: Related aspects of a web for all*. Retrieved July, 2018, from <https://www.w3.org/WAI/intro/usable>

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