APPLIED INFORMATION TECHNOLOGY

ATAR course examination 2017

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

Section Two: Short answer **25% (55 Marks)**

Question 16 **(6 marks)**

(a) List **three** features of a user interface that will ensure the logical and hierarchical organisation of content. (3 marks)

Description	Marks
Any **three** of:	
• search function • bread crumbs • site map • navigational controls • menus • clarity • consistency • responsiveness • simplicity	1–3
Total	**3**
Accept other relevant answers.	

(b) Outline **three** features that can be incorporated in a graphical user interface (GUI) to make it suitable for visually-impaired people. (3 marks)

Description	Marks
Any **three** of:	
• zoom facility – allows for magnification so that the user can see better • text-to-sound/screen reader – allowing user to hear what is happening on the screen • colour control – ability to change colours to accommodate colour blindness • contrasting elements on the page – allows for better readability	1–3
Total	**3**
Accept other relevant answers.	

Question 17 **(15 marks)**

(a) Explain the concept of virtual collaboration and provide **one** example. (3 marks)

Description	Marks
Explains the concept of virtual collaboration.	2
Identifies an aspect of the concept of virtual collaboration.	1
Subtotal	**2**
Provides one relevant example/tool.	1
Subtotal	**1**
Overall total	**3**

(b) Describe **two** advantages of using virtual collaboration technology. (4 marks)

Description	Marks
For each of the **two** advantages:	
Describes an advantage of using virtual collaboration technology.	2
Identifies a positive aspect of using virtual collaboration technology.	1
Total	**4**
Answers could include: • pooling of expertise – virtual collaboration gives teams an opportunity to add a quality expert that fits the needs of the team without the restriction of physical proximity of collaborators • cost effective – the time and costs associated with transportation to physically bring together team members from different geographic locations can be substantially higher than the cost of a virtual collaborative application • less overhead – avoid paying for office space and parking for employees as employees can work from home.	

(c) Describes **two** disadvantages of using virtual collaboration technology. (4 marks)

Description	Marks
For each of the **two** disadvantages:	
Describes a disadvantage of using virtual collaboration technology.	2
Identifies a negative aspect of using virtual collaboration technology.	1
Total	**4**
Answers could include: • technological limits – because technology cannot convey important information, such as context and expressions of emotion, teams are limited in their grounding of knowledge and interpersonal relations; technology that does not effectively support either collaborators' abilities or the process of the collaboration will result in a signal loss, etc. • reliance on technology – collaborators who do not understand how to use the virtual collaboration technology cannot perform their tasks as efficiently; malfunctions in the communication technology can also hinder task progress. Also, incompatible or differing technology used between team members may make it more difficult for task to be accomplished • lagged communication – time lags due to technology-mediated communication can cause confusion between collaborators. Such coordination problems can frustrate collaborators and result in unnecessary work.	

(d) Explain in detail **one** implication of using virtual collaboration technology. (4 marks)

Description	Marks
Explains in detail one implication of using virtual collaboration technology.	4
Provides some relevant points about one implication of virtual collaboration technology.	3
Makes general comment/s about one implication of virtual collaboration technology.	2
Makes superficial comment/s about one implication of virtual collaboration technology.	1
Total	**4**
Answers could include: • reliance upon technology for example, power supply and bandwidth • conflicts or misunderstandings – in the absence of non-verbal cues, cultural differences between members of virtual teams.	

Question 18 (6 marks)

Describe **three** reasons for the use of layers in graphics software.

Description	Marks
For each of the **three** reasons:	
Describes the reason for the use of layers in graphics software.	2
Makes superficial comment/s about the use of layers in graphics software.	1
Total	6
Answers could include: To: • deliver control over structure • ensure that different layers can be worked on simultaneously • enable different properties to be set for different layers • allow for individual layers to be locked or frozen.	

Question 19 (6 marks)

Describe **three** key differences between HTTP and HTTPS as communication protocols.

Description	Marks
For each of the **three** key differences:	
Describes the difference between HTTP and HTTPS as communication protocols.	2
Identifies a point of difference between HTTP and HTTPS as communication protocols.	1
Total	6
Answers could include: • HTTP (Hyper Text Transfer Protocol), does the same thing as HTTPS (Hyper Text Transfer Protocol over Secure Socket Layer) like transferring information such as document, file, image, video between computers over internet, but it is not in an encrypted format • both protocols are designed to transfer information between computers over WWW (World Wide Web). The main difference comes into play when 'S' is attached with the HTTP • HTTPS encrypts an HTTP message prior to transmission and decrypts a message upon arrival • HTTPS can prevent intruders/hackers from installing malware • HTTPS can protect from intruders inserting their own advertisements into your resources. For example, some third parties inject advertisements into websites that potentially break user experiences and create security vulnerabilities • HTTPS can provide data integrity for both the websites and users' personal information.	

Question 20 **(6 marks)**

Describe how the network security measures listed below prevent unauthorised access to networks.

Description	Marks
Physical security	
Describes how physical security prevents unauthorised access to networks.	2
Makes superficial comment/s about physical security in relation to network security.	1
Subtotal	**2**
Firewalls	
Describes how firewalls prevent unauthorised access to networks.	2
Makes superficial comment/s about firewalls in relation to network security.	1
Subtotal	**2**
Passwords	
Describes how passwords prevent unauthorised access to networks.	2
Makes superficial comment/s about passwords in relation to network security.	1
Subtotal	**2**
Overall total	**6**
Answers could include: • physical security – involves the use of locks on windows, doors or cupboards that house the devices used in a private network • firewalls (hardware and/or software) – configured with specific criteria to monitor and control traffic to or from a network • passwords – complex password of six to eight alphanumeric and special characters will provide unauthorised access to a computer or private network.	

Question 21 **(4 marks)**

Describe **two** ways in which digital communication can be used for educational purposes.

Description	Marks
For each of the **two** ways:	
Describes the way digital communication can be used for educational purposes.	2
Makes superficial comment/s about how digital communication can be used for educational purposes.	1
Total	**4**
Answers could include: • online videos to demonstrate experiments • communicate with students regarding tasks, feedback • measuring and tracking assessment issues • capturing and storing evidence • paperless report delivery • online lectures • collaboration with students on projects • collaboration with teachers to create curriculum.	

Question 22 **(6 marks)**

Describe **three** benefits to a company of outsourcing its production globally.

Description	Marks
For each of the **three** benefits:	
Describes the benefit to a company of outsourcing its production globally.	2
Makes superficial comment/s about a company in relation to outsourcing its production globally.	1
Total	**6**
Answers could include: Enables a company to: • achieve lower operational and labour costs as third parties or external agencies' costs are cheaper • focus on core business processes while delegating mundane time-consuming processes to external agencies • tap into and leverage a global knowledge base, having access to world class capabilities.	

Question 23 **(6 marks)**

Explain **two** issues that might arise for a business in storing data in the cloud.

Description	Marks
For each of the **two** issues:	
Explains an issue that might arise for a business in storing data in the cloud.	3
Makes general comment/s about an issue that might arise for a business in storing data in the cloud.	2
Makes superficial comment/s about an issue that might arise for a business in storing data in the cloud.	1
Total	**6**
Answers could include: • confidentiality of data might be compromised as this data might not be securely encrypted when it is on the provider's services and the business has an obligation to keep their customers' data secured • level of accessibility which would mean that data stored can be potentially accessed by any employee and thus may be compromised • possible attacks on shared technology, for example shared space on provider's servers and other parts of the provider's infrastructure which may compromise customer data • sensitivity of documents may not be adhered to by the provider and therefore expose the customer and the business information to potential security risks.	

Section Three: Extended answer **20% (45 Marks)**

Question 24 **(45 marks)**

(a) Identify **three** devices in which convergence trends are evident in the infographic on page 15. (3 marks)

Description	Marks
Any **three** of:	
• smartphone • smart TV • connected car • smart fridge	1–3
Total	**3**
Accept other relevant answers.	

(b) Explain how each of these trends has impacted the lifestyles of the householders in the infographic. (9 marks)

Description	Marks
For each of the **three** trends identified in part (a):	
Explains how the trend has impacted the lifestyles of the householders.	3
Makes general comments about how the trend has impacted the lifestyles of the householders.	2
Makes superficial comment/s in relation to the trend and the lifestyles of the householders.	1
Total	**9**
Answers could include: • smartphone – users are able to use the internet, take photos, make calls, video events • smart TV – users can watch TV, browse the web, chat on social networking, watch YouTube • connected car – provides navigation, traffic updates, diagnosis and tracking of systems, music streaming.	

Question 24 (continued)

(c)   Identify **two** types of personal information and **two** types of sensitive information relating to the householders that could be stored in the smart home.   (4 marks)

Description	Marks
Identifies two relevant types of personal information.	1–2
Identifies two relevant types of sensitive information.	1–2
Total	**4**

Answers could include information relating to:
• location of the householders
• demographic or biometric details of the householders
• lifestyle patterns or occupancy details of the householders
• data on matters of privacy of the householders.

(d)   Explain **three** different ways in which the householders could ensure the security of their personal and sensitive data in the smart home.   (9 marks)

Description	Marks
For each of the **three** different ways:	
Explains a way in which the householders could ensure the security of their personal and sensitive data in the smart home.	3
Makes general comments about a way in which the householders could ensure the security of their personal and sensitive data in the smart home.	2
Identifies or makes superficial comment/s about a way in which the householders could ensure the security of their personal and sensitive data in the smart home.	1
Total	**9**

Answers could include:
• encryption of data to protect data in transit
• biometric access with key override to provide secure access and a fail-safe for power blackouts
• installing antivirus software on computers to protect personal information
• installing a firewall on computers to separate a secure area from a less secure area and control communications between the two.

(e) Explain **two** ways in which the digital technologies evident in the smart home enable the householders to participate in the global market. (8 marks)

Description	Marks
For each of the **two** ways:	
Explains a way in which the digital technologies evident in the smart home enable the householders to participate in the global market.	4
Makes some relevant comments about a way in which the digital technologies evident in the smart home enable the householders to participate in the global market.	3
Makes general comments about a way in which the digital technologies evident in the smart home enable the householders to participate in the global market.	2
Makes superficial comment/s about the digital technologies evident in the smart home and the householders participating in the global market.	1
Total	**8**

Answers could include:
- householders can use the smart TV that is connected to the home network to watch Netflix or other media streaming apps
- the smartphone connected to the network can be used to purchase products online
- householders can use the connected car to purchase or subscribe to streaming media services for example, Spotify or iTunes.

(f) Explain **three** ways in which emerging mobile technologies are meeting the needs of users. Support your response with reference to the infographic on page 15. (12 marks)

Description	Marks
For each of the **three** ways:	
Explains a way in which emerging mobile technologies are meeting the needs of users. Supports their response with reference to the infographic.	4
Makes some relevant comments about a way in which emerging mobile technologies are meeting the needs of users. Makes some relevant reference to the infographic.	3
Makes general comments about a way in which emerging mobile technologies are meeting the needs of users. Makes minimal reference to the infographic.	2
Makes superficial comment/s about emerging mobile technologies and meeting the needs of users. Makes limited or no reference to the infographic.	1
Total	**12**

Answers could include:
- data is no long primarily gained from user input, sensors collect data via the Internet of Things to allow device to device interaction. For example, sensors in appliances send notifications to smartphone.
- human to device interaction via APIs allows personalisation via the Internet of Things, increasing efficiency and convenience to the consumer. For example automatic reordering of selected products such as milk with a smart fridge
- business access to data from devices is key to increased efficiency and productivity. For example, landscape control via landscape systems.

Section Four: Scenario   **40% (80 Marks)**

Question 25   **(80 marks)**

(a)   Explain how you will use **three** project planning tools to assist with the development of
       the digital solution for this project.   (9 marks)

Description	Marks
For each of the **three** project planning tools:	
Explains how they will use the project planning tool to assist with the development of the digital solution for this project.	3
Makes general comments about how they will use the project planning tool to assist with the development of the digital solution for this project.	2
Makes superficial comment/s about how they will use the project planning tool to assist with the development of the digital solution for this project.	1
Total	**9**
Answers could include: • Gantt chart – use it to illustrate time frames of the design project • flow chart – use it to communicate steps of the design project clearly • storyboard – use it to plan what goes on each page to ensure goals are met for the design project • project management software – use it to collaborate with team members in real time.	

(b)   Outline **three** advantages of using a Cascade Style Sheet (CSS) in your digital solution.
                                                                                        (3 marks)

Description	Marks
Any **three** of:	
For copyright reasons this text cannot be reproduced in the online version of this document. • allows for multiple platforms.	1–3
Total	**3**
Accept other relevant answers.	

(c)   Describe **two** features that you could incorporate into your digital solution to facilitate
       user-generated content.   (4 marks)

Description	Marks
For each of the **two** features:	
Describes the feature that they could incorporate into their digital solution to facilitate user-generated content.	2
Identifies the feature that they could incorporate into their digital solution to facilitate user-generated content.	1
Total	**4**
Answers could include the: • tweets – encourage conversation about the app, charging stations • blogs – ask for users to comment on their experiences • instagram – encourage customers to share images of stations, charging • forms – collects data from the user.	

(d)   Explain how you intend to incorporate the concepts listed below into the appearance of
        your digital solution.   (12 marks)

Description	Marks
Structure	
Explains how they intend to incorporate structure into the appearance of their digital solution.	3
Makes general comment/s about how they intend to incorporate structure into the appearance of their digital solution.	2
Makes superficial comment/s about structure in relation to the appearance of their digital solution.	1
Subtotal	**3**
Usability	
Explains how they intend to incorporate usability into the appearance of their digital solution.	3
Makes general comment/s about how they intend to incorporate usability into the the appearance of their digital solution.	2
Makes superficial comment/s about usability in relation to the appearance of their digital solution.	1
Subtotal	**3**
Accessibility	
Explains how they intend to incorporate accessibility into the appearance of their digital solution.	3
Makes general comment/s about how they intend to incorporate accessibility into the appearance of their digital solution.	2
Makes superficial comment/s about accessibility in relation to the appearance of their digital solution.	1
Subtotal	**3**
User interface	
Explains how they intend to incorporate user interface into the appearance of their digital solution.	3
Makes general comment/s about how they intend to incorporate user interface into the appearance of their digital solution.	2
Makes superficial comment/s about user interface in relation to the appearance of their digital solution.	1
Subtotal	**3**
Overall total	**12**

Answers could include:
- Structure – simple hierarchical structure, standard navigational links, link to homepage, site mapping to outline the website's structure and navigation scheme
- Usability – settings tab/button which allows users to change preferences to suit their needs, e.g. contrast, time zone, language; Search bar that is easily located and recognised to allow users to locate specific information, categorised content for mobile responsiveness
- Accessibility – audio descriptions so that people with a visual impairment can enjoy the event, option for changing colour contrast for visual disabilities, screen reader that reads aloud (blind, eyesight issues), create content that can be presented in different ways, e.g. for simpler layout, breadcrumb navigation
- User interface – uncluttered, clear consistent layout, simple navigation, use typography to create hierarchy and clarity; careful placement of text/items to help increase readability and engagement.

Question 25 (continued)

(e)   List **three** standards from the Web Design and Applications Standard of the World Wide Web Consortium (W3C). (3 marks)

Description	Marks
Any **three** of:	
• HTML and CSS • graphics (images) • audio and video • accessibility • internationalisation • mobile web.	1–3
Total	**3**
Note to markers: accept JavaScript, Web APIs; Privacy; and Math on the web.	

(f)   Explain how your digital solution will reflect each of these standards. (9 marks)

Description	Marks
For each of the **three** standards identified in part (a):	
Explains how their digital solution will reflect to the standard.	3
Makes general comments about their digital solution and the standard.	2
Makes superficial comment/s about their digital solution and the standard.	1
Total	**9**
Note to markers: candidates can refer to their web and/or app design in their responses.	
Answers could include: • graphics – use of SVG which is supported by most browsers and PNG • accessibility – use of transcripts for Podcasts or audio files, Screen reader that reads aloud • internationalisation – use of language translators/options, unit conversions for examples, kilometres and miles • HTML and CSS – CSS to allow the presentation of the webpage/app design to be adaptable to different types of devices. HTML to code the structure of the website • graphics (images)– to ensure that the web pages and web applications optimise the presentation of information for different audiences with different needs and expectations.	

(g) Design the home page of the Australian Electric Vehicle Company website in the space provided on page 27 to raise awareness of the company and provide information about electric vehicles and charging stations. You may use the space below to plan your response. Your design must include annotations and show the:

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

Description	Marks
Layout and structure of design	
Produces an effective drawing/representation of the website that includes detailed, supporting annotations.	5
Produces an appropriate drawing/representation of the website that includes some supporting annotations.	4
Produces a rudimentary drawing/representation of the website that includes some relating annotations.	3
Produces a simplistic drawing of the website that includes limited annotations.	2
Produces a limited drawing of the website that has 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 and practical organisation of content for the given digital medium and that includes supporting annotations.	3
Produces a design that shows some practical organisation of content for the given digital medium and that includes some relating annotations.	2
Produces a design that shows limited organisation of content for the given digital medium and that has 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 that includes supporting annotations.	3
Produces a design that shows some navigation controls suitable for the given digital medium and that includes some relating annotations.	2
Produces a design that shows limited navigation controls for the given digital medium and that has inadequate or no annotations.	1
Total	**3**

(v)   user-generated content suitable for the given digital medium.   (3 marks)

Description	Marks
User-generated content suitable for the given digital medium.	
Produces a design that features effective user-generated content for the given digital medium and that includes supporting annotations.	3
Produces a design that shows some user-generated content suitable for the given digital medium and that includes some relating annotations.	2
Produces a design that shows limited user-generated content for the given digital medium and that has inadequate or no annotations.	1
Total	**3**

(h) Design the landing page (first page) of the app called EVA (Electric Vehicle Application) in the space provided on page 29 to provide the locations of electric vehicle charging stations. You may use the space below to plan your response. Your design must include annotations and show the:

(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 that includes detailed, supporting annotations.	5
Produces an appropriate drawing/representation of the landing page of the app that includes some supporting annotations.	4
Produces a rudimentary drawing/representation of the landing page of the app that includes some relating annotations.	3
Produces a simplistic drawing of the landing page of the app that includes limited annotations.	2
Produces a limited drawing of the landing page of the app that has 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 used 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 and practical organisation of content for the given digital medium and that includes supporting annotations.	3
Produces a design that shows some practical organisation of content for the given digital medium and that includes some relating annotations.	2
Produces a design that shows limited organisation of content for the given digital medium and that has inadequate or no annotations.	1
Total	**3**

Question 25(h) 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 that includes supporting annotations.	3
Produces a design that shows some navigation controls suitable for the given digital medium and that includes some relating annotations.	2
Produces a design that shows limited navigation controls for the given digital medium and that has inadequate or no annotations.	1
Total	**3**

    (v)   user-generated content suitable for the given digital medium.   (3 marks)

Description	Marks
User-generated content suitable for the given digital medium.	
Produces a design that features effective user-generated content for the given digital medium and that includes supporting annotations.	3
Produces a design that shows some user-generated content suitable for the given digital medium and that includes some relating annotations.	2
Produces a design that shows limited user-generated content for the given digital medium and that has inadequate or no annotations.	1
Total	**3**

    (i)   You have developed the home page for the website and the landing page for the app and are now aware that the Australian Electric Vehicle Company requires the ongoing maintenance of both products. Describe **three** benefits of a service level agreement between the company and you, the developer.   (6 marks)

Description	Marks
For each of the **three** benefits:	
Describes the benefit of a service level agreement between the company and the developer.	2
Makes superficial comment/s about the benefit of a service level agreement between the company and the developer.	1
Total	**6**
Answers could include: • ongoing maintenance – ensure data is updated and current • ongoing support – downtime, expected service levels • website is responsive – availability across multiple browsers, platforms • app is responsive – availability across multiple browsers, platforms • outlines the availability of service • clarifies the type of service.	

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