Government of **Western Australia**
School Curriculum and Standards Authority

ATAR course examination, 2017

Question/Answer booklet

APPLIED INFORMATION TECHNOLOGY

Please place your student identification label in this box

Student number: In figures | | | | | | | | | |

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.

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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	55	25
Section Three Extended answer	1	1	50	45	20
Section Four Scenario	1	1	70	80	40
				Total	100

Instructions to candidates

1. The rules for the conduct of the Western Australian external examinations are detailed in the *Year 12 Information Handbook 2017*. Sitting this examination implies that you agree to abide by these rules.

2. 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. 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.

3. Write your answers to the questions in Sections Two, Three and Four in this Question/Answer booklet.

4. 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.

5. Supplementary pages for the use of planning/continuing your answer to a question have been 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.

See next page

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. 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.

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1. Encryption is used to ensure the

   (a) security of a message.
   (b) content of a message.
   (c) routing of a message.
   (d) transmission of a message.

2. Communication standard 802.3 is a specification for

   (a) an interface between two wireless clients on a LAN.
   (b) the physical media and characteristics of a LAN.
   (c) accessing information over a mobile wireless network.
   (d) the method of connecting hosts on the internet.

3. In designing a website, which of the following techniques will ensure accessibility?

   (a) text alternatives for non-text content in the HTML
   (b) tags for linking to external CSS files and images in the HTML
   (c) the functionality to navigate the user interface via various peripheral devices
   (d) the provision of clearly-drawn charts, graphs and illustrations in the HTML

4. When using colour profiles for a website, paper print and T-shirt fabric, which of the following will ensure accurate colour matching?

   (a) website – RGB, paper print – Pantone, T-shirt fabric – CMYK
   (b) website – CMYK, paper print – Pantone, T-shirt fabric – Pantone
   (c) website – RGB, paper print – RGB, T-shirt fabric – CMYK
   (d) website – RGB, paper print – CMYK, T-shirt fabric – Pantone

5. Which of the following graphic file formats will preserve the layers of an image when saved?

   (a) CGM
   (b) GIF
   (c) TIFF
   (d) BMP

See next page

6. Which of the following colours are complementary?

   (a) red and blue
   (b) red and orange
   (c) red and purple
   (d) red and green

7. Samuel would like to email an encrypted document to his manager that will contain confidential information. He wishes to ensure that the document will be read by his manager only, that his manager will be assured that the document was sent from a trusted and verified source and that it has not been changed by anyone. Which of the following electronic strategies is the **most** suitable for Samuel to use, given his requirements?

   (a) password protect the document and then send the document as an email attachment
   (b) send an email with the document attached and a digital signature
   (c) password protect the document and then send the document as an email attachment and call the manager by phone
   (d) send an email with the document attached and an electronic signature

8. A restaurant wishes to access data to identify patterns and trends of the population profile in the surrounding suburbs. Which method should the restaurant use?

   (a) data in the cloud
   (b) data warehouse
   (c) data mining
   (d) data marts

9. In designing a Local Area Network (LAN) for a small business, which of the following devices would allow you to connect the LAN to the internet?

   (a) desktop
   (b) router
   (c) firewall
   (d) hub

10. The typeface used in this examination paper is called ‘Arial’. This is known as a

    (a) serif typeface.
    (b) sans typeface.
    (c) sans serif typeface.
    (d) common typeface.

See next page

11. A differential backup technique captures only the changes made

(a) within a day.
(b) since the last end-of-day backup.
(c) since the last incremental backup.
(d) since the last full backup.

12. A web designer can achieve visual interest and direct the attention of the user by using contrasting elements such as colour, line and shape to create

(a) emphasis.
(b) pattern.
(c) movement.
(d) alignment.

13. Which of the following is the **most** appropriate measure for ensuring that your computer system is safe from an attack by malicious code?

(a) anti-virus software
(b) passwords
(c) encryption
(d) disaster recovery plan

14. A document that outlines expected behaviours of employees in relation to work emails, internet use and privacy in the workplace is called

(a) a privacy statement.
(b) a work, health and safety policy.
(c) an inclusivity policy.
(d) a code of conduct.

15. The concept of freedom of information in Australia provides the right of access to documents held by

(a) private companies and all government agencies.
(b) private companies and public companies.
(c) all government ministers and all government agencies.
(d) all government ministers and most government agencies.

End of Section One

See next page

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

This section has **eight (8)** questions. Answer **all** questions. Write your answers in the spaces provided.

Supplementary pages for the use of planning/continuing your answer to a question have been 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 **(6 marks)**

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

One: _____

Two: _____

Three: _____

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

One: _____

_____

Two: _____

_____

Three: _____

_____

Question 17 **(15 marks)**

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

Example:

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

One:

Two:

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

One:

Two:

See next page

Question 17 (continued)

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

Question 18 **(6 marks)**

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

One:

Two:

Three:

Question 19 **(6 marks)**

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

One: _____

Two: _____

Three: _____

See next page

Question 20 **(6 marks)**

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

Physical security: _____

Firewalls: _____

Passwords: _____

Question 21 **(4 marks)**

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

One: _____

Two: _____

Question 22 **(6 marks)**

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

One: _____

Two: _____

Three: _____

Question 23 **(6 marks)**

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

One: _____

Two: _____

End of Section Two

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See next page

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

This section contains **one (1)** question. Write your answers in the spaces provided.

Supplementary pages for the use of planning/continuing your answer to a question have been 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 **(45 marks)**

The internet has become a natural part of our everyday lives. Some people see this digital technology as a way to a brighter, more convenient future, while others have concerns about who can access information and how it is used. The only thing that seems certain is that the internet is constantly evolving. These shifts in technologies have affected our lives in both positive and negative ways.

An example of this evolving technology is the 'Internet of Things'. The Internet of Things enables the interconnectedness of networked devices and smart devices and the provision of virtual and physical functionality. This interconnected nature allows for the provision of services and control of networked devices.

Analyse the infographic on page 15, which shows the results of a Global Mobile Phone Consumer Survey conducted by an American company in 2014. It reveals that 65% of smartphone owners would find value in smart home solutions and 72% would find value in connected car solutions. The results indicated that this group in particular had a strong desire for 'Internet of Things' solutions for the home and car. Refer to the infographic and answer the question parts that follow.

See next page

The Internet of Things Moves In

Would find value in smart **HOME** solutions

- Smartphone owners **65%**
- All consumers **55%**
- Consumers willing to pay for smart home solutions **71%**

47% **Home control**
lights, heating and burglar alarms controlled by smartphone

40% **Home monitoring**
in-home camera footage viewed and controlled by smartphone

20% **Entertainment**
entertainment systems display social media postings

18% **Appliance control**
sensors in appliances send notifications to smartphone

9% **Landscape control**
landscape systems measure plant moisture, watering only when necessary

Younger generations (18–24)

17% Compared to other consumers surveyed, the youngest generation valued landscape control the most. Do they not want to do their chores?

16% Surprisingly, the youngest generation is also the age group most interested in self-driving cars. Would they rather text than get behind the wheel?

Would find value in connected **CAR** solutions

- Smartphone owners **72%**
- All consumers **63%**
- Consumers willing to pay for connected car solutions **60%**

40% **Traffic/Weather**
real-time traffic and weather updates displayed on in-car screens

39% **Navigation**
mapping and route optimisation

28% **Maintenance**
automated diagnosis and tracking of vehicle's systems

23% **Access**
remotely lock and track vehicle via Internet-connected device

18% **Entertainment**
music streaming to in-car entertainment system

10% **Automation**
driverless operation

While the least valued connected technology is the self-driving car,

60% of all consumers would be willing to pay for one.

18% **Fuel Tracking**
fuel efficiency tracking

See next page

Question 24 (continued)

Digital technology is evolving so rapidly that new capabilities and improved functionality are constantly being offered through innovative convergent devices and applications.

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

One: _____

Two: _____

Three: _____

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

One: _____

Two: _____

Three: _____

(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)

Personal information

One: _____

Two: _____

Sensitive information

One: _____

Two: _____

(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)

One: _____

Two: _____

Three: _____

See next page

Question 24 (continued)

(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)

One:

Two:

(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)

One:

Two:

Three:

End of Section Three

See next page

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

This section contains **one (1)** question. Write your answers in the spaces provided.

Supplementary pages for the use of planning/continuing your answer to a question have been 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 **(80 marks)**

There has been worldwide interest in the electric vehicle industry in recent years and more people are now becoming aware of the benefits of owning an electric vehicle. Two such benefits are lower running costs compared with petrol cars and the use of clean fuel/energy contributing to a more energy-efficient future.

However, a survey in Australia has revealed that many potential electric vehicle owners are concerned about the number of charging stations available and the location of these stations.

To raise even further awareness about electric cars and to promote the accessibility of charging stations, the Australian Electric Vehicle Company has contracted you to design **two** digital solutions:

- the home page for the company's website, to raise awareness of the company and to provide information about electric vehicles and charging stations
- the landing page (first page) of a mobile application (app), to provide the locations of electric vehicle charging stations.

After a brainstorming session with stakeholders, the company has provided you with the headings below to organise the content of its products.

The home page of the website must include the following:

- About us
- Our values
- Contact
- Charging stations
- Locations
- Maps
- Reviews
    - Support
    - Frequently Asked Questions (FAQs).

The app will be called EVA (Electric Vehicle Application) and must include the following:

- Locations of charging stations
- Details of charging stations
- Pictures of charging stations
- Directions to charging stations
- Member feedback and reviews.

See next page

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

See next page

Question 25 (continued)

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

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

See next page

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

Structure:

Usability:

Accessibility:

User interface:

Question 25 (continued)

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

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

See next page

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See next page

Question 25 (continued)

(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)

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

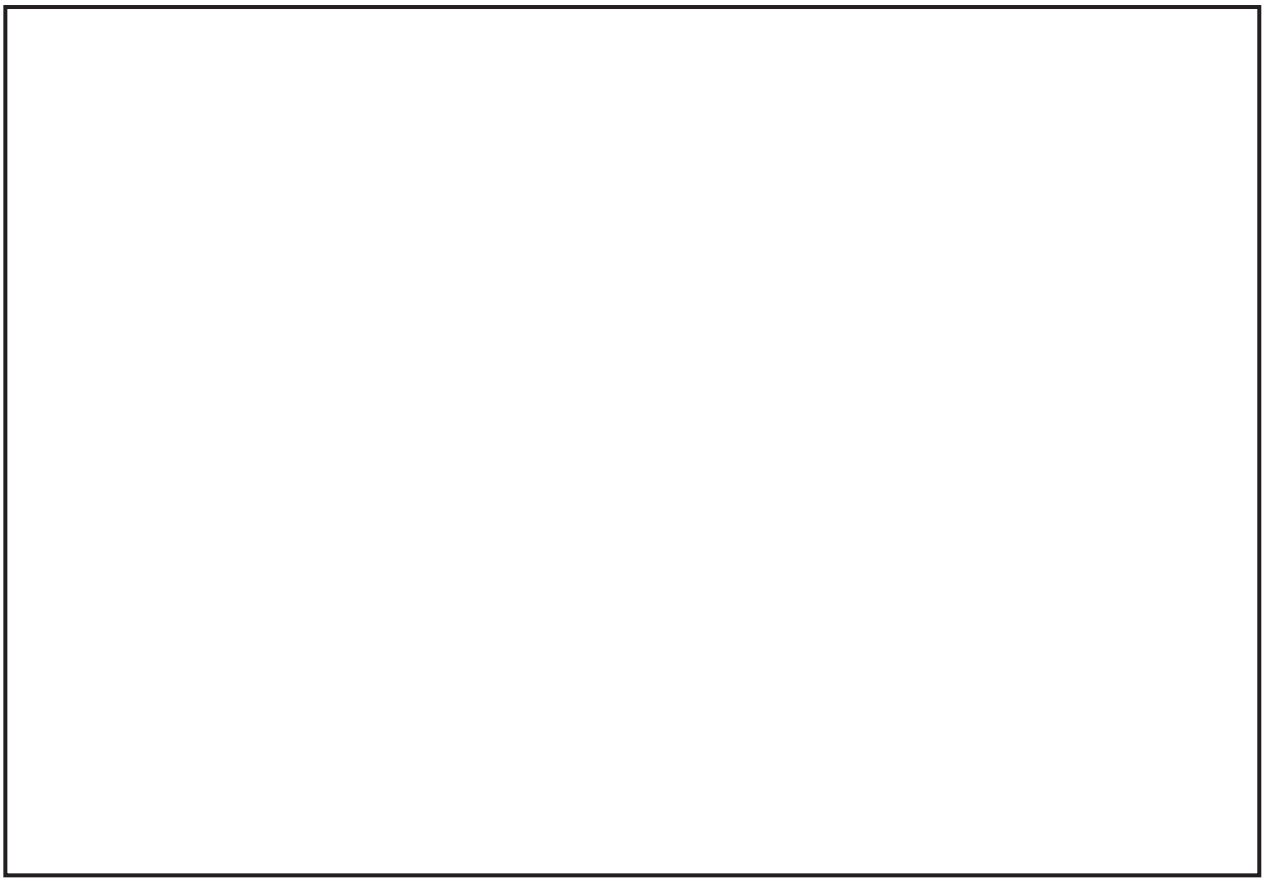
(iii) organisation of content suitable for the given digital medium (3 marks)

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

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

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

See next page



See next page

Question 25 (continued)

(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)

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

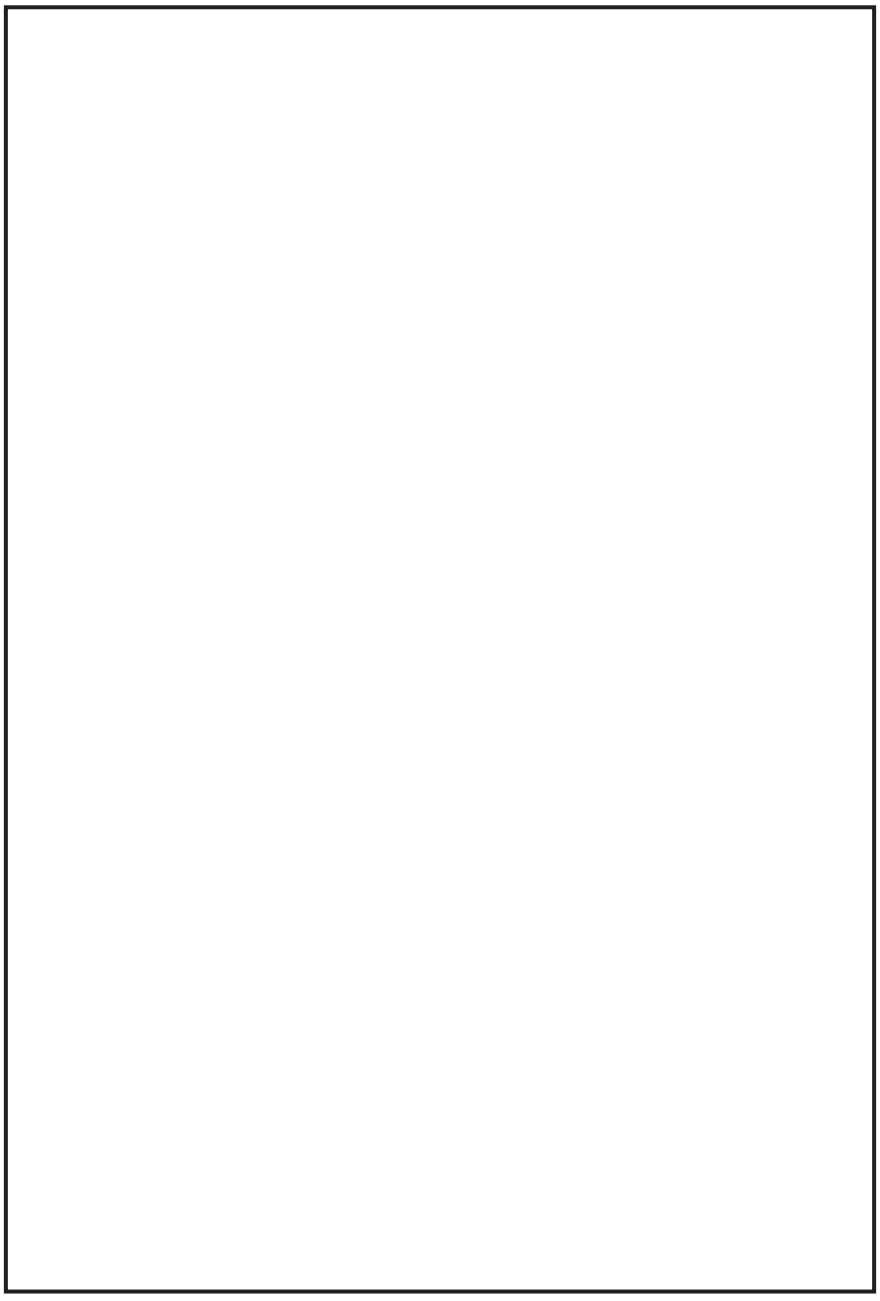
(iii) organisation of content suitable for the given digital medium (3 marks)

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

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

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

See next page



See next page

Question 25 (continued)

(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)

End of questions

Question number: _____

Question number: _____

Supplementary page

Question number: _____

Supplementary page

Question number: _____

Supplementary page

Question number: _____

ACKNOWLEDGEMENTS

Question 24

Information from: The internet of things [Definition]. (n.d.) In *Wikipedia*. Retrieved June, 2017, from https://en.wikipedia.org/wiki/Internet_of_things
Used under Creative Commons Attribution-ShareAlike 3.0 Unported licence.

Infographic from: Deloitte Development. (2015). *The internet of things moves in*. Retrieved February 20, 2017, from www.techeconomy.it/wp-content/uploads/2015/09/us-tmt-Internet-of-things-GMCS_Infographic_v2-2015.jpg

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