



ATAR course examination, 2022

Question/Answer booklet

APPLIED INFORMATION TECHNOLOGY

Please place your student identification label in this box

WA 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.

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	44	20
Section Four Scenario	1	1	70	67	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 2022: Part II Examinations*. 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. 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.

Sections Two, Three and Four: Write your answers to the questions in this Question/Answer booklet preferably using a blue/black pen. Do not use erasable or gel pens.

3. 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.
4. 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. To provide meaningful business insights, a supermarket requires data from all of its departments to be collected and managed on one system. Which of the following online data storage methods would be **most** suitable?
 - (a) data mart
 - (b) data warehouse
 - (c) database
 - (d) data mining

2. Which of the following **best** protects the intellectual property of a device created by inventors?
 - (a) copyright
 - (b) trademarks
 - (c) registered designs
 - (d) patents

3. A feature of Web 3.0 includes
 - (a) individual focus and the participative web.
 - (b) behavioural advertising.
 - (c) user engagement, individual focus and behavioural advertising.
 - (d) user experience and engagement.

4. Two of the **most** important design considerations for people with disabilities are
 - (a) contrast and accessibility.
 - (b) alignment and inclusivity.
 - (c) balance and usability.
 - (d) balance and contrast.

See next page

5. Brane is an ICT manager at Superb Tech Incorporated. He has recently purchased a laptop with 8GB RAM primary storage and 256GB HDD/SSD secondary storage. Which one of the following usability issues is **not** affected by the hardware specifications?
- (a) the device regularly freezes
 - (b) running older application software on a new device
 - (c) storing data online
 - (d) no storage space available
6. Which of the following influences the usability of a web page?
- (a) responsive design
 - (b) text-to-speech
 - (c) headings alignment
 - (d) language translator
7. Which one of the following communication protocols retrieves web resources such as HTML files?
- (a) TCP/IP
 - (b) 802.11x
 - (c) 802.3
 - (d) HTTP
8. A group of Year 12 students are wanting to gather data from all students in their cohort for a project. Which method would be the **most** efficient?
- (a) email
 - (b) online form
 - (c) instant messaging
 - (d) paper
9. A local retail company has decided to reduce costs by transferring portions of its work to external suppliers. This is known as
- (a) outsourcing.
 - (b) project management.
 - (c) productivity.
 - (d) service level agreement.

10. When browsing the Internet, Kim came across a website that did not include transcripts of audio or the ability to use keyboard input. Which W3C standard was **not** being met?
- (a) graphics
 - (b) audio and video
 - (c) accessibility
 - (d) internationalisation
11. Which of the following would **not** be included in a workplace code of conduct?
- (a) work hours
 - (b) email use
 - (c) internet use
 - (d) salary
12. Under Freedom of Information (FOI), individuals have a legally enforceable right to access government documents and government agencies have the responsibility to disclose information on request. Which one of the following types of documents is exempt from this?
- (a) Commercially valuable information
 - (b) Employee records
 - (c) Policy making document
 - (d) Personal medical records
13. Which one of the following protocols is fundamental for computers and other devices to establish connections and ensure delivery?
- (a) HTTP
 - (b) 802.11x
 - (c) TCP/IP
 - (d) HTTPS
14. Which one of the following W3C standard file formats allows full scalability of graphics?
- (a) GIF
 - (b) SVG
 - (c) PNG
 - (d) JPEG
15. Which of the following colour schemes are complementary colours?
- (a) blue and green
 - (b) red and orange
 - (c) violet and blue
 - (d) yellow and purple

End of Section One

See next page

Section Two: Short answer

25% (55 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

(4 marks)

Discuss why it is important for designers to protect their intellectual property (IP).

Question 17

(6 marks)

Explain **two** issues a business might face in using cloud computing.

One: _____

Two: _____

Question 18

(10 marks)

- (a) Describe **two** effects of using digital communication when collaborating on a school project. (4 marks)

One: _____

Two: _____

- (b) Compare **two** ways in which digital communication can be used for collaborating on a school project. (6 marks)

One: _____

Two: _____

Question 19

(12 marks)

- (a) Explain the purpose of a content management system (CMS). (3 marks)

- (b) Macy is starting a business selling cupcakes. She has been advised to explore a content management system (CMS) to build and manage a website for her business. Explain **three** features of a CMS that would benefit Macy's business. (9 marks)

One: _____

Two: _____

Three: _____

Question 20

(4 marks)

Describe **two** ways in which digital technology has contributed to improved productivity in the workplace.

One: _____

Two: _____

Question 21

(4 marks)

Identify and explain **one** method that would allow a user to access their files without having a physical storage device.

Question 22

(6 marks)

- (a) Describe the concept of online censorship of information in a global context. (2 marks)

- (b) Describe **two** effects of online censorship of information by governments. (4 marks)

One: _____

Two: _____

Question 23

(9 marks)

Tom is the manager of a café in the Perth central business district. He is exploring new and emerging technologies that can improve business processes. Tom would like to implement a method for customers to order and pay via Electronic Funds Transfer (EFT) from their table.

- (a) Identify a suitable mobile device and describe how it could be used to process customers' orders and payments from their tables. (3 marks)

- (b) Explain **two** advantages for the café of using the mobile device identified in part (a). (6 marks)

One: _____

Two: _____

End of Section Two

See next page

This page has been left blank intentionally

See next page

Section Three: Extended answer

20% (44 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

(44 marks)

Read the information below to complete this question.

A recent study was undertaken of a large number of healthcare industries into the processes and practices of data management used by providers. The study found that over the years, many healthcare industries have replaced traditional paper-based systems with online digital systems. The 'Internet of Things', (IoT), played a vital role in this context, with more healthcare data becoming digitised. Even with this rapid change of technology, it is believed that less than 6% of the budget that is associated with a healthcare system is invested in its cybersecurity. Most healthcare organisations do not become aware of a security breach until months after it has happened, causing a massive concern with respect to the privacy and security of all data.

The Care Hospital was one of the hospitals considered in the study and a brief synopsis of its digital practices is shown below.

The Care Hospital has been collecting and storing a large amount of patient data over the years. The hospital has just recently moved to a digital system from a paper-based system; however, staff were not offered any training or upskilling on the processing of data or in particular the security of data.

The local server is located in the hospital's admission office next to the staff's computer station and hence is accessible to all staff. Access to data on the local server is protected by a single shared password, regardless of staff job roles. There is no other authentication required to access any type of record. When staff were asked about the network security measures used, they explained that there were no network security measures in place besides a generic password. All staff have access to a common, shared email address, which often receives phishing scams. Staff use their smartphones to carry out work emails. They no longer have personal computer stations. Instead, there are shared computer stations for staff which are networked to allow online access to the server. Through the online access to the local server, all staff have access to patients' data on their smartphones. Personal and sensitive information including patient details, disease diagnoses and procedures are all easily accessed online.

With the hospital's permission, staff take photos of medical records and search appointment schedules on their hospital-supplied smartphones. The smartphone's barcode scanning feature is also used by staff to verify the patient's identity via their identification band around their wrist and accordingly administer medication to the patient. This barcode feature has greatly reduced errors, potential harm to the patients and costs to the hospital. The progress of a patient's healing and recovery are videoed by staff for further analysis, for example, the healing of wounds and physical movement. Patients can also request videos of exercises to be sent to their personal smartphones so that they can follow these in their own time.

See next page

The Care Hospital reported that it recently experienced a ransomware attack and hacking. Consequently, many of the computers and personal smartphones had been locked by hackers and access to patient records blocked. This caused a lot of stress for workers who were trying to assist patients. Some personal and sensitive information was also leaked online, including information such as addresses, credit card details and private medical records. As a result, sensitive healthcare data were compromised.

The hospital ensures that all staff have the most up to date technology on their smartphones in order to ensure efficiencies in the care and management of the patients. The hospital's data is backed up at the end of each month, although it has no structured process for archiving data.

The Care Hospital's management has asked you to review the hospital's practices and provide advice to management by answering the following questions.

- (a) Using an example from the Care Hospital's practices, discuss the impact of convergence trends in the hospital. (6 marks)
- (b) Using an example for each, explain **three** types of network security measures the hospital could use to keep its data safe. (9 marks)
- (c) Using an example for each, outline **two** advantages and **two** disadvantages of accessing personal and sensitive patient information via software connected to the network as opposed to a paper-based system. (8 marks)
- (d) With reference to the scenario, explain the following issues with the use of cloud computing:
- confidentiality of data
 - sensitivity of documents
 - level of accessibility.
- (9 marks)
- (e) Explain, using **two** examples, how the hospital could improve its archiving and backup of data. (6 marks)
- (f) Describe what a disaster recovery plan is and discuss how it would benefit the hospital. (6 marks)

Section Four: Scenario

40% (67 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

(67 marks)

Great Western University (GWU) is establishing itself in the Perth central business district. GWU offers alternative courses and everyday living facilities to cater for the diversity of its students. GWU is due to open in December 2023 and will include childcare facilities, fitness classes, cafés, tennis courts, hairdresser, medical centre and scooters to roam the premises.

GWU would like to stand out from other universities and advertises itself as an innovative and inclusive university that encourages mental and physical wellbeing for the whole person.

You have been contracted to project manage the design of a website and mobile application (app) for GWU.

It is the intention of GWU to have the website and app produced with extensive planning and attention to detail. A team of designers will be employed and the project will be progressed in stages. Testing and feedback will be valuable in the development of the website and app.

The homepage of the website and app should include the following:

- courses and programs
- facilities and activities
- grounds map
- scooter hire facility
- café.

- (a) 'Prototype' and 'structured' are two project management approaches. Given this scenario, recommend and justify a project management approach suitable for the development of the design. (4 marks)

Question 25 (continued)

- (b) Explain, in relation to the case study, why it is important to develop a graphical user interface (GUI) suitable for a target audience. (4 marks)

- (c) Comment on the difference between user experience (UX) and user interface (UI). (4 marks)

- (d) Describe **three** features that you would expect to be included in the user interface for both the website and app. (6 marks)

One: _____

Two: _____

Three: _____

Question 25 (continued)

- (e) Design the website homepage for Great Western University (GWU) in the space provided on pages 26 and 27.

Your design must include annotations and show:

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

Anything written on this page will not be marked.

PLANNING ONLY

This page has been left blank intentionally

See next page

Question 25 (continued)

Use the surrounding area for annotations.





Question 25 (continued)

- (f) Great Western University (GWU) has provided a draft design of the grounds map section of the app on page 29 and are requesting your feedback on the initial design.

You are required to annotate the grounds map design on page 29 to comment on the following:

- (i) appropriateness of the layout and structure of the draft design (5 marks)
- (ii) the elements and principles of design used and a critical analysis of the relationship between them (5 marks)
- (iii) **one** usability consideration and its purpose (2 marks)
- (iv) **one** accessibility consideration and its purpose. (2 marks)



See next page

Question 25 (continued)

The grounds map design on page 29 allows users to use the camera on their smartphone to navigate to their chosen destination.

Respond to GWU by providing feedback on the following points:

- (g) (i) Identify **two** new or emerging technologies and explain how each technology might be used in the grounds map section of the app design. (8 marks)

One: _____

Two: _____

- (ii) Describe the specifications of **two** essential hardware components necessary for the digital device to be able to use the grounds map section of the app design. (4 marks)

One: _____

Two: _____

- (iii) With respect to the grounds map section of the app, explain **two** hardware considerations likely to influence its suitability to meet users' needs. (6 marks)

One: _____

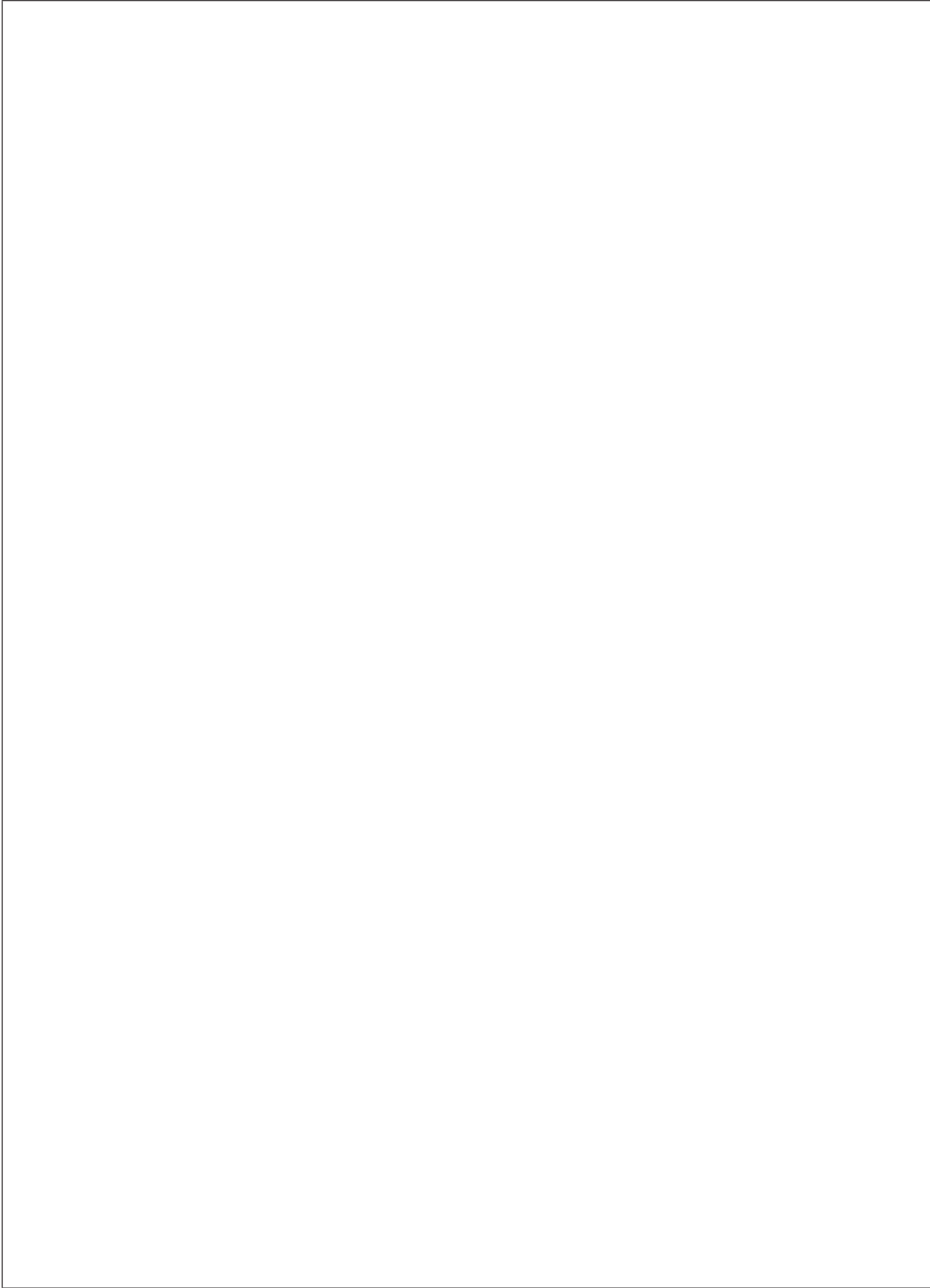
Two: _____

Supplementary page

Question number: _____

Supplementary page

Question number: _____



Supplementary page

Question number: _____

ACKNOWLEDGEMENTS

Question 12

Adapted from: Woolrych, D. (2015). *Here are the 5 key things you need to know about the Freedom of Information Act*. Retrieved June, 2022, from <https://lawpath.com.au/blog/5-things-you-need-to-know-about-the-freedom-of-information-act>

This document – apart from any third party copyright material contained in it – may be freely copied, or communicated on an intranet, for non-commercial purposes in educational institutions, provided that it is not changed and that the School Curriculum and Standards Authority (the Authority) is acknowledged as the copyright owner, and that the Authority's moral rights are not infringed.

Copying or communication for any other purpose can be done only within the terms of the *Copyright Act 1968* or with prior written permission of the Authority. Copying or communication of any third party copyright material can be done only within the terms of the *Copyright Act 1968* or with permission of the copyright owners.

Any content in this document that has been derived from the Australian Curriculum may be used under the terms of the Creative Commons [Attribution 4.0 International \(CC BY\)](https://creativecommons.org/licenses/by/4.0/) licence.

An *Acknowledgements variation* document is available on the Authority website.

Published by the School Curriculum and Standards Authority of Western Australia
303 Sevenoaks Street
CANNINGTON WA 6107