



**THE UNIVERSITY
OF QUEENSLAND**
A U S T R A L I A

This exam paper must not be removed from the venue

Venue _____

Seat Number _____

Student Number

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Family Name _____

First Name _____

School of Electrical Engineering & Computer Science
Semester Two Examinations, 2024
ENGG7811 Research Methods

This paper is for St Lucia Campus students.

Examination Duration: 120 minutes

Planning Time: 10 minutes

Exam Conditions:

- No written or printed material permitted
- No calculators permitted
- During Planning Time - Students are encouraged to review and plan responses to the exam questions

Materials Permitted in the Exam Venue:

(No electronic aids are permitted e.g. laptops, phones)

None

Materials to be supplied to Students:

Additional exam materials (e.g. answer booklets, rough paper) will be provided upon request.

1 x Gradescope Bubble Sheet

Instructions to Students:

If you believe there is missing or incorrect information impacting your ability to answer any question, please state this when writing your answer.

For Examiner Use Only

Question	Mark
1 (2 points)	
2 (2 points)	
3 (2 points)	
4 (2 points)	
5 (2 points)	
6 (2 points)	
7 (2 points)	
8 (2 points)	
9 (2 points)	
10 (2 points)	
11 (20 points)	
12 (20 points)	
13 (20 points)	
14 (20 points)	
(Maximum is 100 points total)	

Total _____

Multiple Choice Questions – 20 points

Each multiple choice question is worth two (2) points.

Answer all questions by filling in the bubble sheet provided.

Question 1. (2 points)

Using IEEE format, what is the correct way to cite directly copied text from a source into your own work?

- A “This is the directly copied text” [5, p. 37].
- B “This is the directly copied text” [5].
- C This is the directly copied text [5, p. 37].
- D This is the directly copied text, as cited in [5].

Question 2. (2 points)

Which of the following best describes a data management plan?

- A A document describing the standardization of methodologies for data collection and data verification in a research study.
- B A document outlining procedures for data acquisition, storage, sharing, and archiving, as well as policies for data security and access.
- C A document that specifies the software tools and platforms to be used for data analysis throughout a research project.
- D An outline of responsibilities for team members regarding data handling, including who will manage data entry and who will oversee quality control.

Question 3. (2 points)

You have collected and analysed medical image data of 20 human volunteers and are in the final stages of writing up a conference article on your findings. One participant informs you that they no longer wish to participate in the study. What is the correct thing to do?

- A Continue to use the data up to the point at which the participant withdrew, as they consented at the beginning of the study.
- B Remove the participant's data from your study and adjust your analysis accordingly, but keep a record of their data in case your analysis might benefit from it later.
- C Remove the participant's data from your study and adjust your analysis accordingly. Make note of the removal in the article and in your records.
- D Remove the participant's data from your study and adjust your analysis accordingly. Make note of the removal in the article and in your records. Destroy that participant's data.

Question 4. (2 points)

You are a committee member in a meeting deciding which company to select for a new project. During the discussion, you realize that your spouse (wife/husband/partner) has a financial interest in one of the companies. What should you do?

- A Wait to see which company is selected; if it is the one your spouse has a financial interest in, then formally register the conflict after the meeting.
- B Discuss the issue with the chair of the committee after the meeting, then formally register the conflict.
- C Interrupt the meeting to disclose that you may have a conflict of interest. Formally register the conflict after the meeting.
- D Formally register the conflict after the meeting. Declare the conflict to other committee members at the start of the next meeting.

Question 5. (2 points)

You want to use a photograph from a website in an academic presentation. What is the best course of action?

- A Use the photograph. As it is for educational purposes, you can assume it falls under fair use.
- B Use the photograph providing a citation. As it is for educational purposes, you can assume it falls under fair use.
- C Check to see how the photograph is licensed and comply with the terms of the license.
- D Edit the photograph to make it different from the original, then use the photograph.

Question 6. (2 points)

You are giving an academic presentation on your research project to the school. You get a question related to your topic but on an aspect of your project that you weren't actively researching. You don't know the answer. What is the best way to respond?

- A Answer with your best guess based on related knowledge from your research and a quick check of ChatGPT, emphasizing that it is not directly from your study.
- B Politely explain that the question falls outside the current scope of your research but note its relevance for future work.
- C Acknowledge that it isn't something that has been considered in the current study. Describe the steps you could take to answer the question and explore the topic further.
- D Indicate that while you appreciate the question, you would prefer to focus on questions directly related to your presented research during the Q&A.

Question 7. (2 points)

arXiv is a repository for preprints hosted by Cornell University. What would be the best source for an explanation for why the X in arXiv is capitalised?

- A A confident explanation on an online discussion forum on Reddit, by a native English speaker who explained that the X is actually the letter CHI (in Greek) which makes the pronunciation of 'arXiv' sound like 'archive'.
- B It was explained in an ENGG7811 lecture
- C It was explained in a refereed paper published in a journal unrelated to the arXiv website
- D It was mentioned in a Cornell University press release that quoted Paul Ginsparg, who set up the arXiv website and chose the name.

Question 8. (2 points)

ICORE is an international ranking of conferences by computer science professors (originally called Computing Research and Education, CORE, in Australia). Which of the following would you expect to find in ICORE?

- A The Australasian Joint Conference on Artificial Intelligence
- B The Australasian Astrophysics Conference
- C Papers from arXiv.org
- D All of the above

Question 9. (2 points)

What information needs to be added to the following for correct IEEE referencing style?

[1] A. Adamatzky, "On Electrical Spiking of *Ganoderma resinaceum*," *Biophysical Reviews and Letters*, vol. 16, no. 04, 2021, doi: 10.1142/s1793048021500089.

- A The date of access of the article
- B The page numbers
- C The full date of publication of the article
- D The author's full name, Andrew Adamatzky

Question 10. (2 points)

In arXiv, there are 2 versions of a paper, the first is a preprint and the second is after peer review which entailed a more rigorous data analysis. The first version reports that algorithm A is 20% more accurate than algorithm B. The second version claims the reverse, that algorithm B is 20% more accurate than algorithm A. You have been using algorithm A in your research. Which paper should you cite?

- A You should cite version 1 because you are using algorithm A.
- B You should cite version 2 but use the accuracy results from version 1.
- C You should cite version 2 because it has been peer reviewed.
- D You should cite version 1 because it was the earliest publication of the paper.

Short Answer Questions – 80 points

Each question is worth twenty (20) points.

Answer the questions in the boxes provided. **You do not need to fill the entire box to receive full marks.** If you require more space, use an exam book and clearly label the question you are answering.

Question 11. (20 points)

For each of the following research scenarios state if a human ethics application (at any level) is required before the research project can start. Justify your answer.

- (a) You are investigating how the use of augmented reality (AR) headsets impacts our ability to perform certain tasks. The study involves monitoring participants' heart rates, eye movements, and brain activity while they solve puzzles using AR technology. **(5 points)**

- (b) You are testing the accuracy and efficiency of a new robotic arm designed to identify, pick up and throw away rubbish left on the ground. You recruit three students to help set up the test environments for each experiment. **(5 points)**

Question 11. continued on next page

Question 11. continued

- (c) You are leading a large research team (20 people) that has developed a new wearable device to track physical activity and sleep patterns. The device will be tested on the 5 PhD and 3 course-work research students that have been helping with the project. The results will be anonymised and included in a research publication. **(5 points)**

- (d) You are analysing trends in mental health diagnoses using an AI model by accessing a pre-existing, online database of anonymized hospital records. The database includes detailed patient histories, diagnosis codes, and treatment outcomes. **(5 points)**

Question 12. (20 points)

You are conducting a usability test for a fitness tracking website you've just launched designed to motivate people to exercise. You reach out to friends and family members who are fitness enthusiasts to participate in the study. You are wanting to collect data on the overall user experience, and effectiveness of the website at motivating users.

- (a) What are some quality issues that may arise in this study and how would you mitigate them? (8 points)

[illegible]

Question 12. continued on next page

Question 12. continued

- (b) What are two quantitative measures you might collect to answer your research question? **(4 points)**

- (c) Describe one qualitative question you could ask in addition to the quantitative data. How could this help improve your understanding of quantitative results? **(8 points)**

Question 13. continued

- (b) Calculate the h-index of Dr. Jones using the information listed on their application. Show your working or reasoning. **(2 points)**

- (c) Upon checking Web of Science and Google Scholar you find Dr. Jones' h-index is different on both databases compared to the one you calculated. Explain the possible cause of these discrepancies. **(6 points)**

- (d) Another job applicant, Dr. Martinez, lists their h-index as 17. Since the applicants are applying for the same job position, can you directly compare the h-index of Dr. Jones and Dr. Martinez? Why or why not? **(6 points)**

Question 14. (20 points)

- (a) You are a student enrolled in ENGG7811 and want to request a change of tutorial times in Week 6 due to a medical appointment. Write a professional email requesting a change of tutorial time from your regular tutorial time (T4, Thursday 4pm, tutor Marshall) to an earlier time (T1, Wed 8am, tutor Chen). Your answer should include where you would send or post the request and any other relevant information. **(10 points)**

This image shows a single page of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is a solid vertical line on the left side, creating a margin. The paper appears to be from a notebook or a standard ruled document.

Question 14. continued on next page

Question 14. continued

- (b) After you graduate, you apply for a research position and need a letter of reference from one of your former lecturers at UQ. You decide to approach your thesis project advisor Dr Alice Smith as you received a 7 in your thesis (course code COMP7811).

Complete either option 1 or option 2, but not both **(10 points)**

Option 1. Write an email requesting a reference from Dr Smith following professional communication standards. What additional steps would you take before sending the request?

Option 2. You decide to ask ChatGPT to create the first draft of your request for you. What information would you provide as prompts to the large language model? What additional steps would you take before sending the request?

[illegible]

END OF EXAMINATION