

CS 3710: Introduction to Cybersecurity Midterm, summer 2025

Name _____

Be sure to write your name and e-mail ID on top of this page.

If you are still writing when “pens down” is called, your exam will be ripped up and not graded. So please do that first. Sorry to have to be strict on this!

There are 6 pages to this exam. Once the exam starts, please make sure you have all the pages. Questions are worth different amounts of points.

Answers for the short-answer questions should not exceed about 20 words; if your answer is too long (say, more than 30 words), you will get a zero for that question!

This exam is CLOSED text book, closed-notes, closed-calculator, closed-cell phone, closed-computer, closed-neighbor, etc. Questions are worth different amounts, so be sure to look over all the questions and plan your time accordingly. Please sign the honor pledge below.

Free public WiFi

Is it really safe to use?

Ask Man in Middle

Page 2: Security mindset, terminology, & ethics

1. [6 points] List the 4 ethical frameworks. For each one, briefly describe it (in one short sentence!) and then describe how it can be abused.
2. [3 points] *Briefly* define the security mindset.
3. [3 points] *Briefly* describe what a *zombie* is (the cybersecurity definition, not the undead definition).

Page 3: Encryption

4. [3 points] *Briefly* describe how a RSA signature works.
5. [3 points] List and *briefly* describe three attacks on RSA other than breaking the mathematical foundations it is based upon.
6. [3 points] *Briefly* list two advantages of public key encryption (specifically RSA) over secret key encryption (specifically AES). Read the next question before you answer this one.
7. [3 points] *Briefly* list two advantages of secret key encryption (specifically AES) over public key encryption (specifically RSA). These reasons need to be distinct from the ones in the previous question (and they can't be the inverse, either).

Page 4: Networks and web security

8. [6 points] List the 5 layers in the TCP/IP network model and *briefly* describe each layer.
9. [3 points] *Briefly* list the two things that make public key encryption hard, and what "operation" is the "hard" part. (This questions asks for two because you can't discuss elliptic curves since we did not study them in detail).
10. [3 points] List the three most important items in a certificate (think about what is absolutely necessary for a certificate to work). Then list three other items in a certificate.

Page 6: No questions here

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**KINDERGARTEN MATH
FINAL EXAM**

Q. WRITE DOWN THE
BIGGEST NUMBER YOU
CAN THINK OF

A.

**PRE-ALGEBRA
FINAL EXAM**

Q. WRITE DOWN THE
VALUE OF x IF $x=3x-8$

A.

**CALCULUS
FINAL EXAM**

Q. WRITE DOWN THE
VALUE OF $\int_0^{\pi} x \sin^2 x \, dx$

A.

**PHD COSMOLOGY
FINAL EXAM**

Q. WRITE DOWN THE
HUBBLE CONSTANT
TO WITHIN 1%

A.

**GAME THEORY
FINAL EXAM**

Q. WRITE DOWN 10 MORE
THAN THE AVERAGE OF
THE CLASS'S ANSWERS

A.

**POSTGRADUATE MATH
FINAL EXAM**

Q. WRITE DOWN THE
BIGGEST NUMBER YOU
CAN THINK OF

A.