

Preparation Questions for Quiz5

Disclaimer: I (Arsh Punia) have written the following questions to cement my understanding of the course material for EECS3482. These questions, which are based on the material presented in lectures, are NOT meant to be an official study guide. Any similarity to real quiz questions is purely coincidental and unintended. By using this resource, you agree that I cannot be held liable if this resource is used by you or any subsequent third parties for activities that may be deemed academically dishonest.

Q1. Alice and Bob don't like their boss, Mallory. They also suspect that Mallory reads their messages on the work chat platform, Clack. What would be a sensible way for them to exchange messages discussing their hatred for Mallory without arousing any suspicion?

- a) Encrypted Messages
- b) Plaintext messages
- c) Hiding messages in innocuous memes and cat gifs
- d) None of the above

Q2. Bob, a network admin at BorkU downloads a new load balancing software that would keep E-class from crashing every other day. He notices that the SHA-256 checksum of this executable differs from the checksum published by the software vendor (Belastic). He also heard his colleague Alice at ByersonU complain about a similar issue. What is the most likely root cause of the discrepancy?

- a) There is no discrepancy. Checksums are different on different machines.
- b) An attacker hacked into Belastic servers and modified the executable to contain malicious code
- c) An attacker hacked into YorkU and modified the executable to contain malicious code
- d) All of these are equally likely

Q3. You sell the best anti-malware software ever known to humanity. However, you are starting to get worried about people distributing your malware in the informal market, therefore eating into your profits. What's the best possible course of action for you to identify customers that are selling and/or using illegitimate copies?

- a) Embed digital fingerprints into each copy of software and then tally that information against the fingerprints present in each copy
- b) Hide the link to Rick Anstley's "Never Gonna Give You Up" in every copy of your software
- c) Hire a private army to arrest and interrogate anyone suspected of peddling illegal copies
- d) There is nothing you can do to stop such piracy

Q4. What is NOT a type of information hiding?

- a) Steganography
- b) Digital Watermarking
- c) Fingerprinting
- d) SHA-256 Hashing

Q5. You are trying to hide a message in an image file. What type of redundancy would you use?

- a) Space redundancy
- b) Data redundancy
- c) Compute redundancy
- d) None of the above

Q6. What is the size in kbytes of a 200 x 300 pixels grayscale image?

Q7. You would like to hide a message inside a meme while protecting it from the prying eyes of Big Brother. Your hacker friend once told you that the best way to hide a message is to store it in the least significant bits of an image. What type of image would allow you to maximize the size of the message you are trying to hide? Assume that all images are of the same size

- a) Black and White
- b) Grayscale
- c) Color
- d) Does not matter. They're all functionally equivalent.

Q8. Which of the following would lead to the LEAST distortion of the host image in image steganography? Size here means pixels.

- a) Host image size = Secret image size
- b) Host image size > Secret image size
- c) Host image size < Secret image size
- d) They are all equally distortive

Q9. What property of an image should you be mindful of when trying to hide another image inside it?

- a) Colour composition
- b) Size
- c) PPI
- d) Entropy

Q10. Nighthawks ([https://en.wikipedia.org/wiki/Nighthawks\\_\(painting\)](https://en.wikipedia.org/wiki/Nighthawks_(painting))) is one of Edward Hopper's most famous paintings. If you had to hide a secret image inside an image of the painting, where would you store the bulk of your secret? You may assume that the secret size is less than the size of the painting's image.

- a) I would scatter my secret across the entire image
- b) The area around the bar
- c) In the top and bottom margins
- d) The matter is inconsequential

Answers:

Q1. C

Q2. B

Q3. A

Q4. D

Q5. B

Q6. 60 kbytes

Q7. C

Q8. B

Q9. D

Q10. B