

EE 2066 Engineers in Society

Test #2

Time Limit: 90 minutes

Instructions:

- You must answer all questions.
- **Please note:** All companies, individuals, and situations described in this test paper are fictional and have been created for educational purposes only. They do not represent any real persons or organizations.

Question 1 (40 marks)

Peter is a Senior Cloud Architect at "AuraHome," a leading tech company famous for its AI-powered smart home assistant. The company's public marketing and privacy policy are built on a single, powerful promise: "We only listen when you say the wake-word. Your home is your private space."

While performing a data pipeline optimization, Peter discovers a hidden, undocumented data stream. This stream ingests and processes short, 1-2 second audio snippets from user devices *that were not preceded by the wake-word*. The data is being fed to a third-party AI vendor to "proactively improve wake-word algorithm performance." The existence of this data stream directly contradicts AuraHome's public privacy promises and likely violates data privacy laws.

Peter follows the internal protocol and reports his findings, along with the legal and ethical risks, to his director. The director informs Peter that this is a "special project" approved by senior leadership to gain a competitive edge. And the director tells Peter, "The user agreement has vague language about 'product improvement' that our lawyers think covers us. This is above your pay grade. Document that you've informed me, and then drop it."

Peter is convinced that the company is engaged in a massive, unethical breach of trust that could affect millions of users. The official internal channel has been shut down.

- a) First, clearly distinguish between "**reporting**" through approved internal channels (Peter's initial action) and "**whistleblowing**." Define both concepts and explain the fundamental differences in terms of audience, personal risk, and ethical motivation. (10 marks)
- b) Before taking further action, Peter considers approaching the Vice President of Engineering and threatening to leak the evidence of the hidden data stream unless the project is immediately terminated and the data deleted. Critically evaluate the ethics and pragmatism of this strategy. Discuss whether using the threat of exposure as leverage is a professionally acceptable tactic in this context, any explain why or why not. (10 marks)
- c) One of Peter's potential options is to bypass traditional media and regulators. He considers creating an anonymous account on a platform like **Threads or X**

(formerly Twitter), or producing an anonymous video for YouTube, to leak the technical evidence.

- Critically evaluate this approach. What are the potential benefits (e.g., speed, reach) and the significant risks (e.g., credibility, sensationalism, lack of verification) of using social media for this type of disclosure?
- From an IT perspective, discuss the concept of "anonymity" in this context. Is true anonymity achievable, and what technical risks does Peter face in attempting this?

(10 marks)

d) Considering the Code of Ethics principle to "respect the privacy of others" and to "avoid harm," what is the most ethical course of action for Peter?

- Evaluate his primary options in mind:
 - i. Do nothing further (he has his manager's instruction in writing).
 - ii. Resign in quiet protest.
 - iii. Use the threat of whistleblowing to force internal change.
 - iv. Whistleblow through a traditional, secure channel (e.g., a trusted technology journalist or a regulatory body).
 - v. Whistleblow "anonymously" via social media.
- Choose feasible option(s) and provide an action plan.

(10 marks)

Question 2 (40 marks)

Kennis Lo is a Senior Cybersecurity Architect for a reputable international consulting firm in Hong Kong. Her firm was recently hired by "Quantum Dynamics," a company that lost a bid for a major government contract. The contract is for developing the central data infrastructure for Hong Kong's new "Smart City" initiative. Her job is to conduct a post-mortem security audit of Quantum Dynamics' losing proposal to identify weaknesses for future bids.

During her audit, Kennis confirms that Quantum Dynamics' proposal had a robust, state-of-the-art security design. Out of professional curiosity, she uses publicly available information to research the winning bidder, a local company called "DDNet Tech." She is shocked to discover that DDNet Tech's publicly known security architecture is significantly weaker and uses outdated data encryption standards. Their win seems technically unjustifiable.

Kennis's investigation into public corporate registries revealed that a senior government official on the contract approval committee was a relative of DDNet Tech's primary investor, who made the investment just weeks before the government tender was awarded. Kennis now possesses two sets of information:

1. **Confidential Data:** Expert knowledge, protected by a Non-Disclosure Agreement (NDA) with her client (Quantum Dynamics), that the winning bid was technically inferior from a security standpoint, potentially putting citizens' data at risk.

2. **Public Data:** Circumstantial evidence connecting a government official to the winning company, suggesting a potential conflict of interest.

Kennis believes this situation may constitute a violation of Hong Kong's **Prevention of Bribery Ordinance (POBO)**, specifically involving misconduct in public office.

- a) Analyze the central ethical conflict Kennis faces. On one hand, she has a professional and contractual duty of confidentiality to her client (Quantum Dynamics) under an NDA. On the other hand, as an engineer, she has a public duty to expose potential risks to public data and report suspected corruption. Which duty should take precedence in this situation, and why? Justify your answer using an ethical framework (e.g., Utilitarianism).
(10 marks)
- b) Critically evaluate the evidence Kennis has gathered.
- Is the circumstantial evidence of corruption strong enough to act upon? Discuss the risks of acting on incomplete information versus the risks of inaction.
 - How does the fact that some of her evidence is covered by an NDA ethically complicate her decision to report any wrongdoing? Is it ever ethical to breach an NDA?
- (10 marks)
- c) The primary channel for reporting corruption in Hong Kong is the Independent Commission Against Corruption (ICAC). Describe the role of the ICAC and why reporting to them is fundamentally different from leaking to the media or reporting internally within her company.
(10 marks)
- d) What is the single most ethical and professional action plan for Kennis? Evaluate the following options and choose the first step, providing a robust justification for your choice.
- i. Honor the NDA.
 - ii. Inform the managing partners of her own firm on how to proceed.
 - iii. Inform "Quantum Dynamics" on how to proceed.
 - iv. Anonymously send the evidence to a local newspaper (e.g., the South China Morning Post).
 - v. Formally and confidentially report her suspicions and evidence to the ICAC, despite the NDA and the circumstantial nature of the evidence.
- (10 marks)

Question 3 (20 marks)

Sarah is a professional electrical engineer working for a firm, **"Innovate Engineering Consultants."** The government has appointed her to a specialist technical committee responsible for evaluating bids and recommending a contractor for the city's new public "Smart Lighting" project. While reviewing the list of companies that have submitted bids, Sarah identifies two potential conflicts:

1. **Company A, "BrightLume Inc.":** Sarah's father is a senior project manager at this company. If BrightLume wins the contract, her father will receive a significant performance bonus.
2. **Company B, "UrbanGrid Solutions":** Sarah owns a small number of shares in this company as part of her personal investment portfolio. The value of these shares is likely to increase substantially if UrbanGrid Solutions is awarded the project.

Sarah believes she can remain objective in her technical evaluation, but she recognizes the problematic nature of the situation.

a) Briefly describe the specific type of conflict of interest Sarah has in relation to **Company A** and **Company B**, respectively.

(10 marks)

b) Identify the **two distinct parties** to whom Sarah has a professional duty to declare these conflicts. Describe the essential steps she must take to properly and formally declare these conflicts. What key information must her declaration contain to be considered professionally adequate?

(10 marks)

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