

# Senior Design

## Ethical and professional responsibilities

Spring 2018

Name:

I am in (check one)

- CPE 191
- EEE 192B
- EEE 193B

### PROBLEM 1

- 1) In 1994-1995, it was discovered and widely reported that the last version of the Intel Pentium chip had flaws. At first, Intel sought to hide this information, but later came around to a policy of offering consumers chips in which the flaw had been corrected. We want to use line drawing to get some insight into this problem. The positive and the negative paradigms are stated as follows

(PP) Positive paradigm: product should be as advertised

(NP) Negative paradigm: knowingly sell defective products.

The scenarios in the middle include:

- (a) There is a flaw in the chip, but it truly is undetectable and won't affect any customer's application
- (b) There are flaws in the chip, the customer is informed of them, but no help is offered.
- (c) A warning label says that the chip should not be used for certain applications
- (d) Recall notices are sent out, and all flawed chips are replaced.
- (e) Replacement chips are offered only if the customer notices the problem.

Perform line drawing analysis and suggest the best solution.

## QUESTIONS

- 1) Factual issues involve what is actually known about a case. Give an example.
- 2) Conceptual issues involve the definition and applicability of a term or a concept. Give an example.
- 3) How to solve an ethical problem that results from a factual issue?
- 4) How to resolve an ethical problem that results from a conceptual issue?
- 5) A lawyer claims that his deceased client died of cancer caused by cell phone use and he is suing the cell phone company. Cell phone company claims this is not true. This is a
  - conceptual issue

- factual issue
- 6) A lawyer claims that his deceased client died of cancer caused by cell phone use. Cell phone company claims this is not true. How to solve the issue of the lawyer with the cell phone company?
- By inventing new ethics theory.
  - By defining the meaning of cell phone
  - By doing research to better understand the relationship of cancer with cell phone use and determine facts
  - By doing more research to understand more about ethical theories and laws.
- 7) In order to solve a conceptual issue you have to:
- Define the meaning of the terms and their applicability
  - Establish facts about terms
  - Perform research on new ethical theories
  - Apply new concepts to define facts
  - Transform facts to concepts
- 8) What is the main drawback of cost/benefit analysis?
- 9) Which moral theory can be summarized by: “theory that the aim of action should be the largest possible balance of pleasure over pain or the greatest happiness of the greatest number”.
- 10) Cost-benefit analysis is an application of
- Duty and right ethics
  - Utilitarianism
  - Virtue ethics
  - Halfdecagonism
  - Risk/benefit analysis
- 11) Objections to utilitarianism (check all correct answers):
- Its implementation depends on knowing what will lead to the greatest good, it involves guesswork to determine outcomes.
  - The right of one person or a group may conflict with the right of another person or group.
  - What is best for the whole society may be bad for a particular individual or a group of individuals

- It is difficult to determine the cost
  - Good consequences for a society as a whole are not the only moral considerations
  - How to define duties and rights
- 12) A person's behavior is always ethical when one:
- Has good intentions, no matter how things turned out
  - Does what is best for everyone
  - Does what is best for oneself
  - Does what is most profitable
- 13) Initially, professional societies were not in favor of competitive bidding . They argued that competitive bidding may lead to unethical behaviors. In your opinion, what are these unethical behaviors?
- 14) Explain the difference between internal and external whistle blowing
- 15) Engineers should follow their professional code of ethics because:
- It helps them avoid legal problems such as getting sued
  - It provides a clear definition of what the public has a right to expect from responsible engineers
  - It raises the image of the profession and hence gets engineers more pay
  - The public will trust engineers more once they know engineers have a code of ethics
- 16) Registered professional engineers should undertake services for clients only when
- They need money
  - Their own bid is the lowest bid
  - They are fully competent to carry out the service
  - Carrying out the services would not involve excessive time or effort
- 17) Professional conduct rules require registered engineers to conform to the following rules (check all correct answers for full credit)
- Do not take breaks between projects

- Do not compete unfairly with others
  - Perform services only in the areas of their expertise
  - Avoid conflict of interest
  - Avoid deception
- 18) You are a quality control engineer, supervising the completion of a product whose specification includes using only US made parts. However, at a very late stage you notice that one of your sub-contractors has supplied you with a part having foreign made bolts in it, but these are not very noticeable, and would function identically to US made bolts. Your customer urgently needs delivery of the finished product, what should you do?
- Say nothing and deliver the product with the foreign bolts included, hoping this fact won't be noticed by the customer
  - Find some roughly equivalent violations of the contract or specifications for which the customer is responsible, then negotiate to ignore their violation if they ignore yours.
  - Tell the customer about the problem, and let them decide what they want to do next
  - Talk to some people from the customer company and buy them expensive gifts. Make sure to tell them it is not a bribe.
- 19) You are the engineer of record on a new chip project. The project is behind schedule and the clients need the chip to be delivered in a week otherwise your company will pay a huge penalty. You discover some small problems with the chip. Your boss asks you to certify the product. You should:
- Ask for a 50% raise to certify it.
  - Certify it only if there is no electrocution risk from the chip
  - Refuse to certify it
  - Tell the client about the problem, saying you will certify it if they want you to
  - Certify it and be prepared to sue your boss if they fire you.
- 20) The first and foremost obligation of registered professional engineers is to
- Their employer
  - The government
  - The engineering profession
  - The public welfare