



UNIVERSITY OF JOHANNESBURG

CPS3A EXAM

June 2014

COURSE: CPS3A

TIME: 180 minutes

SUBJECT CODE: CPS3A01/02

MARKS: 100

QUESTION PAPER: 1

EXAMINER: Mr.A.D. Erasmus

INTERNAL MODERATOR: Ms.C.F Botha

Instructions:

Answer **all** the questions in Section A.

Answer **one** questions from Section B.

Answer **one** questions from Section C.

Section A

Answer **all** of the following questions:

1. Explain and compare three types of ethics or morality. (5)
2. Virtue ethics almost always employs three concepts derived from ancient Greek virtue ethics. State and explain each of these concepts. (5)
3. State the principle of utilitarianism and briefly mention one problem that might arise with taking a utilitarian approach. (5)
4. What is the categorical imperative? What are the three maxims we can identify? Explain them each briefly. (5)
5. Give an explanation of the progressive attitude toward the environment. (5)
6. Explain why it is important that engineers need to be sensitive about aesthetic values. (5)
7. Explain the mimetic aspect of works of arts according to Aristotle. (5)

8. Characterize the elements of an aesthetic experience according to Kant (5)
 9. Explain the difference between aesthetic values and functional values. (5)
 10. Explain how environmental aesthetics can or should play a central role when we deal with environmental problems. (5)
- TOTAL (50)**

Section B

Answer **one** of the following questions:

1. Evaluate *Case Study 1 – Unlicensed Engineer* in terms of utilitarianism.
 - a. Explain utilitarianism.
 - b. Explain the ethical issues you have identified in the case study.
 - c. Use utilitarianism to discuss whether or not you agree Lander's actions giving good support for your answer.

(25)
 2. Provide a summary of your understanding of the relationship between engineers and the environment. Comment whether or not you think it is important for engineers to have environmental obligations and why you think so.
 - a. Discuss the relationship between engineers and the environment.
 - b. Discuss your views on the importance of environmental obligations of engineers.
 - c. Provide good reasons for your views on the environmental obligations of engineers.

(25)
- TOTAL (25)**

Section C

Answer **one** of the following questions:

1. Explain aesthetics and how it is related to the engineering profession.
 - a. Define and explain what aesthetics is.
 - b. Explain how and why aesthetics and engineering are related.
 - c. Explain the importance of aesthetic values for engineers.
 - d. Explain how engineers can benefit from aesthetics.

(25)
 2. Explain the relation between aesthetic values and engineering design.
 - a. Explain the difference between aesthetic values and functional value.
 - b. Explain why aesthetic values are difficult to define and to identify in engineering activities.
 - c. Explain the difference between aesthetic architecture and functional building.
 - d. Explain the notions of efficiency, economy, and elegance and their relation to software engineering.

(25)
- TOTAL (25)**
- GRAND TOTAL (100)**

Unlicensed Engineer¹¹⁷

Charles Landers, former Anchorage assemblyman and unlicensed engineer for Constructing Engineers, was found guilty of forging partner Henry Wilson's signature and using his professional seal on at least 40 documents. The falsification of the documents was done without Wilson's knowledge, who was away from his office when they were signed. Constructing Engineers designs and tests septic systems. The signed and sealed documents certified to the Anchorage city health department that local septic systems met city wastewater disposal regulations. Circuit Judge Michael Wolverton banned Landers for 1 year from practicing as an engineer's, architect's, or land surveyor's assistant. The judge also sentenced him to 20 days in jail, 160 hours of community service, \$4,000 in fines, and 1 year of probation. Finally, Landers was ordered to inform property owners about the problems with the documents, explain how he would rectify the problem, and pay for a professional engineer to review, sign, and seal the documents.

Assistant Attorney General Dan Cooper had requested the maximum penalty: a 4-year suspended sentence and \$40,000 in fines. Cooper argued that "the 40 repeated incidents make his offense the most serious within the misuse of an engineer's seal." This may have been the first time a case like this was litigated in Alaska. The Attorney General's office took on the case after seeking advice from several professional engineers in the Anchorage area.

According to Cooper, Landers said he signed and sealed the documents because "his clients needed

something done right away." (The documents were needed before proceeding with property transactions.) Lander's attorney, Bill Oberly, argued that his client should be sentenced as a least offender since public health and safety were not really jeopardized—subsequent review of the documents by a professional engineer found no violations of standards (other than forgery and the misuse of the seal). The documents were resubmitted without needing changes.

However, Judge Wolverton contended that Lander's actions constituted a serious breach of public trust. The public, he said, relies on the word of those, like professional engineers, who are entrusted with special responsibilities: "Our system would break down completely if the word of individuals could not be relied upon."

The judge also cited a letter from Richard Armstrong, chairman of the Architects, Engineers, and Land Surveyors Board of Registration for Alaska's Department of Commerce and Economic Development. Armstrong said,

Some of the reasons for requiring professional engineers to seal their work are to protect the public from unqualified practitioners; to assure some minimum level of competency in the profession; to make practicing architects, engineers, and land surveyors responsible for their work; and to promote a level of ethics in the profession. The discovery of this case will cast a shadow of doubt on other engineering designed by properly licensed individuals.

