

## GNG4170 – Engineering and the Law

Final Examination - April 15, 2005 – 3 hrs, closed book

Spend 15 minutes simply reviewing the entire examination, and, among other things, deciding which questions you will answer – remember, *you are given choices* at each stage of the exam. *If a student answers more than is required, only the first-written response(s) will be considered – the 'extra' writing will be ignored.*

### Part A [25 marks, approx. 45 minutes]

You must answer **one** of the following two questions. *Do not answer both.*  
[5 marks total, approx. 10 minutes]

- A1** (a) what are three (of the four) requirements to be designated a "consulting engineer"? [3 marks]  
(b) what is the main object of the PEO? [2 marks]
- A2** (a) what does "enforcement" mean in terms of the PEO? [3 marks]  
(b) identify two kinds of licences granted by the PEO [2 marks]

You must answer **two** of the following three questions. *Do not answer all three.* Attached to this exam is a copy of sections 72 (definition of professional misconduct) and 77 (code of ethics) of the regulations under the *Professional Engineers Act*. *You must incorporate the relevant provisions of s. 72 and/or s. 77 in your answers to the two questions.*

[10 marks each X 2 = 20 marks, approx. 17 minutes each]

- A3** Delta has worked for ten years, and still works, for WorldEng. In first two years, Delta was a key part of an engineering team that developed plans and specifications for a manufacturing plant, which was then built, for ChemCorp. Five years ago, Delta started working 'on-the-side' for MegaEng (evenings and weekends). MegaEng has just been awarded a contract by PharmaInc to review/check the original plans and specifications for that same manufacturing plant, since PharmaInc is thinking of buying that plant from ChemCorp. The engineers at MegaEng are very busy and do not have the time to do this work. They ask Delta, as part of his part-time work, to do the analysis. First, *briefly* explain what Delta must have done, five years ago, to ensure that the extra work for MegaEng was ethically correct. [4 marks]  
Second, discuss what Delta should do *now* (when MegaEng asks Delta to review the original manufacturing plant plans and specifications). [6 marks]

**A4** Mu is the senior engineer at XYZ Engineering, a large engineering firm. For the past four years, Pi (not yet licensed as an engineer) has worked at XYZ as part of the experience requirements to obtain a licence. Mu has never had any direct contact with Pi (they have never spoken, nor has Mu supervised Pi, nor has Mu even seen any of Pi's work. Pi's main 'contact' has always been Alpha, who supervised Pi throughout the four years.

In order to gain a licence, Pi must establish 'good character', by providing several reference letters.

After having spoken with Alpha, Mu prepares, signs, and sends a letter of reference on behalf of XYZ (without identifying Alpha, or explaining Alpha's relationship with Pi, or the fact that Mu has never had any contact, of any kind, with Pi).

Discuss Mu's actions. [10 marks]

**A5** Kappa (a structural engineer) is on a holiday fishing-trip in northern Ontario, and when walking between lakes, crosses a very simple bridge. Kappa realizes that the bridge is *very* unstable, and could collapse at any moment. There is a 10-metre drop to the rocks below. A day later, while fishing, Kappa meets Omega (an electrical engineer), and Kappa warns Omega about the bridge. Omega says "oh yeah, I designed and built that bridge years ago". Kappa tries to explain the structural problems but Omega says "I think it's fine, I don't like you challenging me or my abilities, and I won't discuss it any more". Omega, angry, paddles away, never to be seen again for the rest of Kappa's trip.

Kappa returns home to Ottawa from the holiday. What are Kappa's obligations at this point? Is it (potentially) a problem if Kappa does nothing? [6 marks]

Briefly discuss Omega's actions. [4 marks]

**Part B** [75 marks, approx. 2 hours]

**B1** Briefly discuss/explain **five** of the following seven terms/principles. *Do not answer all seven.* Your goal should be trying to note five separate, relevant points about each.

[5 marks each X 5 = 25 marks (total), approx. 9 minutes *each*]

- (a) patent;
- (b) the relationship between 'liquidated damages' and 'penalty clauses';
- (c) fraudulent misrepresentation;
- (d) ADR;
- (e) statutory holdback;
- (f) elements of an enforceable contract (*list only*); and
- (g) duties of a director of a corporation.

You must answer **one** (1) of the following three (2) short-answer questions. *Do not answer both.* [10 marks, approx. 15 minutes]

- B2** discuss the issue of "limitation periods" – What is a limitation period? Identify the (relatively) new Ontario Act that applies to this legal principle, and discuss the central points raised by the Act. [10 marks]
- B3** discuss the legal idea of "equitable estoppel" (also called "promissory estoppel"). What common-law 'problem' does it overcome? What are the central legal considerations when the Court considers equitable estoppel? Use an example (*if you wish – it is not necessary*) to help illustrate the points you are making, but *simply* stating a fact situation and the result is not sufficient – *if* you introduce a fact situation, it must *only support* your discussion. [10 marks]

You must answer **two** of the three following hypothetical questions. *Do not answer all three.* [20 marks each X 2 = 40 marks, approx. 30 minutes each, or 1 hour (total)]

- B4** D. Veloper has had plans and specifications prepared (for a new shopping mall), and sends out a request for tenders (*i.e.*, for a general-contractor to *actually build* the mall, according to the plans and specifications).

Included in D. Veloper's information concerning the tendering process are the following terms: (i) once a bid is submitted, it cannot be withdrawn or changed; (ii) a deposit of \$200,000 must be given with each bid at the time it is submitted; and (iii) if Sigma then selects someone, and for any reason whatsoever, that person refuses to formally sign the contract for construction, D. Veloper can pick someone else and either: (a) keep the deposit of the 'refusing' bidder; or (b) sue that person for the difference between their bid and the next lowest bid.

Eight bidders reply and submit tenders/bids by the deadline. D. Veloper then opens the bids, and reviews them. It appears that C. Areless has the lowest bid (\$2.3 million). The next-lowest bidder appears to be ABC Ltd. (\$2.4 million).

At that moment, D. Veloper receives a phone call from C. Areless (one of the bidders). C. Areless says "we want to withdraw our bid, since we've realized we made a mistake in our tender – we know you couldn't realize this looking at the bid itself, but we forgot to include another charge which would have increased our bid by + \$150,000). D. Veloper refuses to allow any changes, and the next day, advises C. Areless that it has 'won' the contract. C. Areless refuses to formally sign the contract.

D. Veloper then awards the contract to ABC, and sues C. Areless for the difference in price between its bid and ABC's bid (*i.e.*, \$100,000). Discuss the relevant legal principles and explain whether D. Veloper would succeed or fail in its claim against C. Areless.

**B5** 123 Engineering designs roller-coasters. One year ago, Green (an engineer at 123) designed a new roller-coaster for MagicLand (the "Doom Machine", which was then immediately built). As part of the contract, Green (on behalf of 123, and on 123 stationery) provided a positive, written opinion/guarantee as to the structural integrity of the Doom Machine. Included on the front-page was the statement: "this report is for MagicLand alone, and our guarantee of the structural integrity of the Doom Machine is for MagicLand alone. Any party who may purchase MagicLand in the future is not entitled to rely on the guarantees or opinion(s) stated in this report. Any third-parties do so at their own risk."

Three months ago, MagicLand ran into financial troubles, and had negotiations with FunWorld Inc. to buy the park. As part of the discussions, FunWorld asked about the structural integrity of the various rides, and Canada's MagicLand gave FunWorld a copy of 123's report/guarantee (vis-à-vis the Doom Machine). FunWorld Inc. bought the whole amusement park.

Last week, at midnight, a pigeon landed on the Doom Machine, and a main part of the structure collapsed. No one was injured (even the pigeon survived without injury), but the Doom Machine was shut down. FunWorld estimates the 'cost' of this accident to be \$1 million (*e.g.*, fix the roller-coaster, lost profits).

FunWorld wants compensation. *Presuming MagicLand is not at fault in any way*, what liabilities in *tort* law arise from these facts? Would your answer/discussion change if the report had *not* contained the qualifying statement?

**B6** PureWater Company hired Filter Ltd to design and install a new filtration system for its bottled-water operations. Filter guaranteed that the system would remove 99.9% of contaminants. The contract contained the following provision: "Filter is not responsible for any indirect/consequential damages which may occur as a result of Filter's work for PureWater". PureWater paid Filter in full upon installation of the new system (for the contractual fee of \$500,000).

In fact, Filter's system never removed more than 70% of contaminants. One month later, PureWater had to hire another company (Barrier Inc) to *properly* design and install a system (which did, in fact, work perfectly to remove 99.9% of contaminants). PureWater had to pay Barrier \$350,000 for this. PureWater also estimates that it lost \$50,000 in profits as a result of the problems with Filter's system.

Discuss what claim PureWater can successfully make against Filter in the circumstances. In your answer, include a discussion of the development of cases concerning contracts containing terms that limit liability.

**[end of exam]**

*[best wishes for both the summer and the future]*