



UNIVERSITY OF TORONTO

Principles of Technology Transfer

Course AER 480H

Final Examination

Monday, 16 April 01, 2:00 pm — 4:30 pm

Examiner: P C Hughes

Note:

- ☐ Exam time: 2.5 hours.
- ☐ Any written material is permitted.
- ☐ Any electronic calculator that is non-printing, silent, and self-powered is permitted.
- ☐ Attempt all questions.
- ☐ The grading scheme is as follows:

| | |
|---------------|----|
| Question 1 | 10 |
| Question 2 | 20 |
| Question 3 | 10 |
| Question 4(a) | 15 |
| Question 4(b) | 5 |
| Question 5 | 20 |
| Question 6 | 20 |

Note Further: In this examination, "completely right" and "completely wrong" answers are unusual. Most of the issues are complex and do not have simple answers. Your objective in this examination should be to show yourself knowledgeable and to identify and discuss key issues. While one's individual resolution of these issues often depends on one's taste, philosophy, and political viewpoint, the idea here is that you make a strong case for whatever stance you take. Cite facts wherever possible to support your arguments.

1. A certain angel investor invests in many new high-technology companies each year. She notices that, on average, of each 10 companies she invests in, two fail outright, six turn out to be "the walking wounded" (meaning that their ROI is about 10% per annum), one gives strong performance (meaning about 25% per annum), and one is a "home run." What annual ROI must the "home run" give so that, on average, she gets 20% ROI on her overall angel investment portfolio?
2. The November 28, 1997, issue of *Canadian Business* magazine had a feature article on ComDev, a company located in Cambridge, Ontario, that manufactures components for satellites and wireless ground-based communications. At one time worth almost \$1B, ComDev has been a major success in the Canadian space business scene.

Here are two quotations from the feature article:

"The focus has shifted from being the great technology house to making money," says [person's name], ComDev's chief scientist. "The past 25 years were the pioneering years, developing satellite technology to the point it has reached today. Now we're facing new challenges—how to make something cheaper, faster, better."

"Technical people are just not good managers, at the end of the day," says [person's name], a former ComDev director who left in July 1997 over a difference of opinion with [the current CEO]. "I felt there was too much engineering and not enough business sense."

Taking *either* or *both* of these quotations as a starting point, write a short opinion piece on what you think about the challenges facing ComDev in its desire to use high technology to be successful in the space business. (Two pages will suffice.)

3. Write an essay about one page long on the following topic:

For knowledge-intensive businesses, engineers are assets, whether they are recorded on the Balance Sheet or not.

Defend or deny this assertion, giving arguments.

4. Today, the new CEO of HiTechCo signed his new employment agreement with the HiTechCo Board of Directors. In that Agreement, he has been awarded stock options as part of his compensation package, as follows:

| Strike Date | Options | Strike Price per Share |
|----------------|---------------|------------------------|
| April 16, 2002 | 20,000 shares | \$ 5.00 |
| April 16, 2003 | 30,000 shares | \$ 10.00 |
| April 16, 2004 | 40,000 shares | \$ 20.00 |

There are currently 1,000,000 shares outstanding to existing shareholders, and you may assume that no *other* shares are issued from treasury between now and April 16, 2004. The CEO feels that, for HiTechCo at least, a company valuation of 20 x earnings is a reasonable formula.

- (a) Assuming the after-tax earnings of HiTechCo turn out to be as follows,

| Date | Annual Earnings (\$000) |
|----------------|-------------------------|
| April 16, 2002 | \$ 500,000 |
| April 16, 2003 | \$ 1,000,000 |
| April 16, 2004 | \$ 2,000,000 |

what is the present value (April 16, 2001) of these stock options? (You may neglect the "time value of money" over this three-year period, but it would be very impressive if you did not.)

- (b) If, instead, the after-tax earnings turn out to be

| Date | Annual Earnings (\$000) |
|----------------|-------------------------|
| April 16, 2002 | \$ 500,000 |
| April 16, 2003 | \$ 900,000 |
| April 16, 2004 | \$ 700,000 |

instead, what is the present value (April 16, 2001) of these stock options?

5. In his well-received book *Crossing the Chasm*, Geoffrey Moore says this:

The real news, however, is not the two cracks in the bell curve, the one between the innovators and the early adopters, the other between the early and the late majority. No, the real news is the deep and dividing chasm that separates the early adopters from the early majority. This is by far the most formidable and unforgiving transition in the Technology Adoption Life Cycle, and it is all the more dangerous because it typically goes unrecognized.

Explain what Moore is talking about and discuss why this subject is important.

6. One of the largest strategic decisions being reflected upon by the CEO of HiTechCo is a possible strategic alliance between HiTechCo and BigCo. Discussions are only in the early stages: he and his opposite number at BigCo have had a very positive meeting; each company has set up a multifunctional negotiating team; and the first two meetings between the latter teams have gone surprisingly well. The basic strategy is this:

- ☑ HiTechCo will be responsible for manufacturing an exciting new product based on its patented technology.
- ☑ BigCo will make available its sales & marketing muscle, its distribution channels, and sufficient financing (with limits yet to be established) to make the alliance successful.

Still, there is a worry. The two partners seem well balanced in many respects, but BigCo is just so, well, *big*! Discuss (one or two pages) what you think of this alliance and the steps you would take to help guarantee its success.