1-3

It is not solely an economic problem—it is a complex problem.

1-9

(a) Maximize the difference between output and input.

(b) Minimize input.

(c) Maximize the difference between output and input.

(d) Minimize input.

1-14

(a) Alternatives:

(1) To stay in the dormitory the rest of the year. We will regard this as the baseline case and compare the costs of the other alternatives with it.

(2) Move into an apartment now.

(3) To stay in the dormitory the balance of the first semester and move into an apartment for the second semester.

(b) Costs of alternatives:

1. Baseline, treat this as zero cost.
2. Income: $300/month from student who buys contract, plus $150/month saved on food; Expenditure: $400/month on rent and utilities. So this yields a net saving of $50/month, which adds up to $350 over seven months.
3. Income: $400/month from student who buys contract, plus $150/month saved on food; Expenditure: $400/month on rent and utilities. So this yields a net saving of $150/month, which adds up to $600 over four months

c) Alternative 3 is the most profitable, though Alternative 2 gets Jovis into an apartment more quickly. Our recommendation depends on how urgently he wants to move out of residence.

1-25

Student answers to this question will be highly variable depending on what they find.

(a) The most obvious ethical issue would be a conflict of interest where a certain project is promoted that, if funded, would help the company for which the engineer works or has ties to through family, friends or, in the worst case, ownership. Along these lines of favouring a particular company, other conflicts could be relaxation of environmental regulations, special tax considerations, changing fee structures by regulated utilities, etc.

(b) Answers will vary according to province.

(c) Student answers will vary depending on what they find. An example here may be difficult to locate, but looking at the magazine published by the provincial engineering association may be helpful. Such magazines typically report on ethics cases that have come before the Ethics Board of the provincial association.