

First Exam

Write all answers in your blue book and show all work there. Return your exam and printout(s) in your blue book.

20 pts.

1) Your company has narrowed its future plans to two options. Option A is expected to yield the following profit over the next years.

Year	Profit
1	40000
2	30000
3	20000
4	10000
5	10000

Option A requires plant and equipment that will cost 100000, paid at the beginning of the first year. The market value of the plant and equipment at the end of the 5 years is expected to be 20000. Option B has

Year	Profit
1	70000
2	55000
3	40000
4	25000
5	20000

Option A requires plant and equipment that will cost 200000, but no payment is required until the end of the second year. There are 3 installments; 100000 then, 50000 six months later and 50000 at the end of the third year. The market value of the plant and equipment at the end of the 5 years is expected to be 40000.

The company has decided to use a 12 percent discount rate. Option B is, however, considered to be more risky.

- Which option has the best present value of profit. Show all work.
- How might the discount rate be adjusted to take account of the differences in risk?

20 pts.

2) Your firm has 2 advertising strategies in mind. One is aggressive in that it attacks the competition and may result in a big profit or it may be disliked and result is a terrible profit. The other approach is conservative, merely making claims about the positive attributes of your product. The table below is thought to represent the probable outcomes and the likelihood of their occurrence.

	Profit(probability)	
	Aggressive	Conservative
Best Outcome	800(.3)	700(.2)
Middle Outcome	600(.4)	600(.4)
Worst Outcome	400(.3)	500(.4)

Use four decision criteria to compare the choices. Assume that the firm is willing to give up 20 cents of EV to reduce the standard deviation by a dollar, i.e., $MRS = .2$.

20 pts.

- 3) a) If $MC = 20 - 2Q + .25Q^2$, draw a well-labeled diagram of this equation, using a derivative to find the key point. Show work.
- b) If $\ln Q = 10 - 2\ln P$ is a demand function, draw a well-labeled diagram of the demand curve, using a derivative to show what happens to the slope as the price changes.
- c) Find the elasticity along the MC curve in part a, when $Q = 10$.
- d) Find the elasticity of demand and MR in part b, when $P = 10$.

15 pts.

4) $Q_D = 100 + .5I - 2P + .7A$

- a) If supply is fixed and I rises by 1000, what is the change in price?
- b) If I and A are 20000 and P is 100, what is the price elasticity of demand?
- c) If I and A are 20000 and P is 100, what is the income elasticity of demand?

10 pts.

5) Suppose that your demand equation is $Q_D = 100 \cdot P^{-2} \cdot I^{.5} \cdot A^{.7}$.

- a) What is the price elasticity of demand?
- b) Given your answer in part a, find the percentage change in Q , if P rises by 5 percent.

15 pts.

6) A budding young entrepreneur is trying to decide whether to take a summer job in a store where she will earn 6000 dollars or take a traveling sales job where she has her own expenses and revenues as follows.

Revenue from sales	40000
Cost of goods sold	30000
Travel expenses	2000
Education expense	5000

The education was necessary for the job and has already been incurred.

- a) What is the economic profit of the sales job, if any?
- b) Which job should she take if all values given are certain?
- c) If the sales figures are speculative, how might that affect her decision?

I have neither given nor received unfair aid on this test nor am I aware of anyone else who has.
