

## Quiz 4

100 Points (Time: 30:00 Minutes)

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Explain and show your work. No use of computer or cell phone allowed. Use of printed formula sheet and table for 8% is allowed. Non-digital textbook for use of 8% table (not the formula) is allowed.

Select one of the problems below and answer.

### PROBLEM 1:

A very popular water and entertainment park headquartered in has been asked by four different cities outside of Texas to consider building a park in their area. All the offers include some version of the following incentives:

- Immediate cash incentive (year 0)
- A 10% of first-year incentive as a direct property tax reduction for 8 years
- Sales tax rebate sharing plan for 8 years
- Reduced entrance (usage) fees for area residents for 8 years

Table below summarizes the estimates for each proposal, including the present worth of the initial construction cost and anticipated annual revenue. The annual M&O costs are expected to be the same for all locations. Use incremental B/C analysis at 8% per year and an 8-year study period to advise the board of directors if they should consider any of the offers to be economically attractive.

	City 1	City 2	City 3	City 4
First cost, \$ million	38.5	40.1	45.9	60.3
Entrance fee costs, \$/year	500,000	450,000	425,000	250,000
Annual revenue, \$ million/year	7.0	6.2	10.0	10.4
Initial cash incentive, \$	250,000	350,000	500,000	800,000
Property tax reduction, \$/year	25,000	35,000	50,000	80,000
Sales tax sharing, \$/year	310,000	320,000	320,000	340,000

### PROBLEM 2:

Glyphosate is the active ingredient in the herbicide Roundup® marketed by Monsanto Co. Roundup has been a dependable product used by farmers, municipalities, and suburbanites alike to control weeds in fields, yards,

**Your Name:**

gardens, streets, and parks. Contributions to Monsanto's revenue have been reduced significantly by international dumping of generic glyphosate, as announced in mid-2010.<sup>1</sup> Monsanto's sales price was decreased from \$16 to \$12 per gallon to compete with the highly competitive pricing, and it is expected that the international price will settle at approximately \$10 per gallon. Assume when the price was set at \$16 per gallon, there was a prediction that in 5 years the price would inflate to \$19 per gallon. Perform the following analysis.

(a) Determine the annual rate of inflation over 5 years to increase the price from \$16 to \$19.

(b) Using the same annual rate determined above as the rate at which the price continues to decline from the new \$12 price, calculate the expected price in 5 years. Compare this result with \$10 per gallon that Monsanto predicted would be the longer-term price.

(c) Provided Monsanto were somehow able to recover the same market share as it had previously, and the same inflation rate was applied to the reduced \$12 per gallon price, determine the price 5 years in the future and compare it with the pre-dumping price of \$16 per gallon.

(d) Determine the market interest rate that must be used in economic equivalence computations, if inflation is considered and an 8% per year real return is expected by Monsanto.