CE 5333 – Special Topics in Water Resources Exercise Set 3

Purpose: Engineering economic mathematics

Exercise

1. Two mutually exclusive project alternatives that provide identical service are described below:

Project ID	Initial Cost	Annual O&M	Salvage Value	Lifespan
A	$10,000	$2,000	$1,000	10
B	$25,000	$1,500	$5,000	20

Assuming a discount rate of 5%

a) Which alternative has the lower annual cost?

b) What is the incremental annual cost of going from the less to the more expensive alternative?

c) Select the best alternative by the present-worth method.

d) What is the rate of return on the incremental investment of B?

e) What initial cost of replacing A after 10 years would make the two alternatives equivalent, assuming none of the other costs change?