

MEBS6016 Energy Performance of Buildings (2006-2007)

SECTION A (numerical answers)

A1. (a) Not applicable

(b)

Numerical answers:

i) Annual energy savings: 5,256 kWh

ii) Annual energy cost savings: \$5,256

iii) Net annual cost saving: \$5,056

iv) Simple payback: 3.96 years

Total life cycle cost: \$13,926

A2. (a) Not applicable

(b)

Numerical answers:

i) Annual energy cost savings in dollars: Option A = \$50,000; Option B = \$30,000

ii) Simple payback: Option A = 4 years; Option B = 3.3 years

iii) Return on investment: Option A = 25%; Option B = 30%

iv) Net present value: Option A = \$107,250; Option B = \$84,350

A3. (a) Not applicable

(b)

Numerical answers:

i) Average cost of electricity: \$1.09 per kWh

ii) Energy utilization index: 228.6 kWh/m²/annum

iii) Energy cost index: \$212.5 /m²/annum

The percentile of this building: 54%.