Name: KEY Id#

ISE 307, Term 153

ENGINEERING ECONOMIC ANALYSIS

Quiz# 4

Date: Wednesday, August 24, 2016

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# **Q1.** The double-declining-balance method is to be used for an asset with a cost of $90,000, estimated salvage value of $4,000 and estimated useful life of five years.

1. What is the depreciation for the five years, assuming that the asset was placed in service at the beginning of the year?
2. If switching to the straight-line method is allowed, when is the optimal time to switch?

(a)

|  |  |  |
| --- | --- | --- |
|  | Without switching | |
|  | DDB | |
| *n* | *Dn* | *Bn* |
| 0 |  | $90,000 |
| 1 | $36,000 | $54,000 |
| 2 | $21,600 | $32,400 |
| 3 | $12,960 | $19,440 |
| 4 | $7,776 | $11,664 |
| 5 | $7,664 | $4,000 |

1. Allowed annual depreciation:

|  |  |  |  |
| --- | --- | --- | --- |
|  | With switching | |  |
|  | From DDB to SL | |  |
| *n* | *Dn (DBB)* | *Bn* | *Dn (SL Method)* |
| 0 |  | $90,000 |  |
| 1 | $36,000 | $54,000 | (90000-4000)/5=17200 |
| 2 | $21,600 | $32,400 | (54000-4000)/4=12500 |
| 3 | $12,960 | $19,440 | (32000-4000)/3=9333 |
| 4 | $7,776 | $11,664 | (19440-4000)/2=7720 |
| 5 | $7,664 | $4,000 | (11664-4000)/1=7,664 |

The switching occurs at the 5th year.

# **Q2.** Nelson Company purchased equipment and incurred the following costs:

* Cash price = $55,000
* Sales taxes = $4,400
* Insurance during transit = $400
* Site preparation, installation, and testing= $2,300

1. Determine the cost basis (the amount to be capitalized) for these cells.
2. Suppose that the equipment was sold after 3 years for $30,000 and it was depreciated using the given below 5-year MACRS Table. Determine the book value and tax gains or losses assuming 35% tax rate.

# 

1. The cost basis of the equipment

|  |  |
| --- | --- |
| Cost of the equipment | $59,400 |
| Insurance | $400 |
| site preparation, installation, testing | $2,300 |
| cost basis | $62,100 |

1. Book Value = 62,100 \* [ 1 – (0.20 + 0.32 + 0.192/2) ] = $23,846.4

Tax gains (losses) = 0.35\*(30,000 - 23,846.4) = $2,153.76

Thus, there will be tax losses of $2,153.76

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