Name: Id#

ISE 307, Term 173

ENGINEERING ECONOMIC ANALYSIS

Quiz# 4 Solution

Date: Monday, August 6, 2018

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# **Q1.** A machine purchased for $50,000 has a depreciable life of five years. It will have an expected salvage value of $5000 at the end of the depreciable life. Using the straight-line method, what is the book value at the end of year 3?

(a) $15,000

(b) $18,000

(c) $20,000

**(d) $23,000**

|  |  |  |
| --- | --- | --- |
| n | Dn | Bn |
| 0 |  | 50000 |
| 1 | 9000 | 41000 |
| 2 | 9000 | 32000 |
| 3 | 9000 | 23000 |
| 4 | 9000 | 14000 |
| 5 | 9000 | 5000 |

# **Q2**. A machine purchased for $50,000 has a depreciable life of five years. It will have an expected salvage value of $10,000 at the end of the depreciable life. Using the double-declining balance (200% DB) method, what is the depreciation amount for year 4?

(a) $0

**(b) $800**

(c) $3,456

(d) $4,320

|  |  |  |
| --- | --- | --- |
| n | Dn | Bn |
| 0 |  | 50000 |
| 1 | 20000 | 30000 |
| 2 | 12000 | 18000 |
| 3 | 7200 | 10800 |
| 4 | 800 | 10000 |
| 5 | 0 | 10000 |

# **Q3**. A machine purchased for $26,000, has a depreciable life of five years. It will have an expected salvage value of $1000 at the end of the depreciable life. Using the double-declining balance (200% DB) method with switching to straight line method, what is the depreciation amount for year 4?

(a) $2,246.4

**(b) $2,308**

(c) $2,808

(d) None of the given answers

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **n** | **Depreciation** | **Book Value** | **Depreciation** | **Depreciation** |
| 0 |  | 26000 | **SL** | **DDB** |
| 1 | 10400.0 | 15600.0 | 5000.0 | 10400.0 |
| 2 | 6240.0 | 9360.0 | 3650.0 | 6240.0 |
| 3 | 3744.0 | 5616.0 | 2786.7 | 3744.0 |
| 4 | 2308.0 | 3308.0 | 2308.0 | 2246.4 |
| 5 | 2308.0 | 1000.0 | 2308.0 | 1323.2 |

**Q4.** A truck for hauling coal has an estimated net cost of $60,000 and is expected to give service for 200,000 miles, resulting in $5,000 salvage value. The book value of the truck after it has been driven for 30,000 miles in the first year and 40,000 miles in the second year is:

(a) $19,250

(b) $21,000

(c) $39,000

(d) **$40,750**

=60000-70000/200000\*(60000-5000) = 40,750

# **Q5.** Suppose that you placed a commercial building (warehouse) in service in March. The building depreciates in 39 years. The cost of the property is $300,000, which includes the $100,000 value of land. Determine the amount of depreciation that is allowed during the first year of ownership.

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**(a) $4,059.83**

(b) $4,273.50

(c) $6,089.74

(d) $6,410.26

= (9.5/12)\*200,000/39 = 4,059.83

# **Q6.** A company purchased a drill press priced at $170,000 in year 0. The company additionally incurred $30,000 for site preparation and labor to install the machine. The drill press was classified as a seven-year MACRS class property. The company is considering selling the drill press for $70,000 at the end of year 4. Compute the book value at the end of year 4 that should be used in calculating the taxable gains.



(a) $53,108.0

(b) $62,480.0

(c) $63,724.5

**(d) $74,970.0**

=200000-200000\*(14.29+24.49+17.49+12.49/2)/100

# **Q7.** The average tax rate for a taxable income of $200,000 using the US Corporate tax schedule given below is around:

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**(a) $30.6%**

(b) $34.0%

(c) $36.5%

(d) $39.0%

=(22250+0.39\*100000)/200000\*100=30.625%

# **Q8.** Given an asset that has a cost basis of $250,000 and was sold for $300,000. The book value for the asset at the time of sale was $150,000. Assume that the capital gain tax rate is 40% while the ordinary gain tax rate is 30%. Then, the net proceeds from this sale is:

(a) $150,000

**(b) $250,000**

(c) $300,000

(d) None of the given answers

= 300,000 – [(300,000-250,000)\*0.40 + (250,000-150,000)\*0.30]

= 300,000 – [20,000 + 30,000] = 250,000