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 2?

(a) $25,000

(b) $27,000

(c) $30,000

**(d) $32,000**

|  |  |  |
| --- | --- | --- |
| 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 $60,000 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) $800

**(b) $2,960**

(c) $4,320

(d) $5,184

|  |  |  |
| --- | --- | --- |
| n | Dn | Bn |
| 0 |  | 60000 |
| 1 | 24000 | 36000 |
| 2 | 14400 | 21600 |
| 3 | 8640 | 12960 |
| 4 | 2960 | 10000 |
| 5 | 0 | 10000 |

# **Q3**. A machine purchased for $36,000, 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) $3,110.4

**(b) $3,388**

(c) $2,888

(d) None of the given answers

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **n** | **Depreciation** | **Book Value** | **Depreciation** | **Depreciation** |
| 0 |  | 36000 | **SL** | **DDB** |
| 1 | 14400.0 | 21600.0 | 7000.0 | 14400.0 |
| 2 | 8640.0 | 12960.0 | 5150.0 | 8640.0 |
| 3 | 5184.0 | 7776.0 | 3986.7 | 5184.0 |
| 4 | 3388.0 | 4388.0 | 3388.0 | 3110.4 |
| 5 | 3388.0 | 1000.0 | 3388.0 | 1755.2 |

**Q4.** A truck for hauling coal has an estimated net cost of $50,000 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 20,000 miles in the first year and 30,000 miles in the second year is:

(a) $11,250

(b) $12,500

(c) $37,500

**(d) $38,750**

=50000-50000/200000\*(50000-5000)= 38,750

# **Q5.** Suppose that you placed a commercial building (warehouse) in service in May. 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) $3,205.13**

(b) $3,418.80

(c) $4,807.69

(d) $5,128.21

= (7.5/12)\*200,000/39 = 3,205.13

# **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 5. Compute the book value at the end of year 5 that should be used in calculating the taxable gains.



(a) $37,927.0

(b) $44,620.0

(c) $45,517.5

**(d) $53,550.0**

=200000-200000\*(14.29+24.49+17.49+12.49+8.93/2)/100

# **Q7.** The average tax rate for a taxable income of $250,000 using the US Corporate tax schedule given below is around:

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**(a) $32.3%**

(b) $34.0%

(c) $39.0%

(d) $40.4%

=(22250+0.39\*150000)/250000\*100 = 32.32%

# **Q8.** Given an asset that has a cost basis of $300,000 and was sold for $400,000. The book value for the asset at the time of sale was $100,000. 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) $100,000

(b) $200,000

**(c) $300,000**

(d) $400,000

= 400,000 – [(400,000-300,000)\*0.40 + (300,000-100,000)\*0.30]

= 400,000 – [40,000 + 60,000] = 300,000