

Name:

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ISE 307, Term 173
ENGINEERING ECONOMIC ANALYSIS

Quiz# 4 Solution

Date: Monday, August 6, 2018

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.

- (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.

0	1	2	3	4	5	6	7	8
	14.29%	24.49%	17.49%	12.49%	8.93%	8.92%	8.93%	4.46%

- (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:

<u>Taxable income</u>	<u>Tax rate</u>	<u>Tax computation</u>
0-\$50,000	15%	\$0 + 0.15(D)
\$50,001-\$75,000	25%	\$7,500 + 0.25 (D)
\$75,001-\$100,000	34%	\$13,750 + 0.34 (D)
\$100,001-\$335,000	39%	\$22,250 + 0.39 (D)

- (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

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

$$= 400,000 - [40,000 + 60,000] = 300,000$$