Homework #3 Prepared by Dr. Richard M. Crowley, 2018

Inventory question (2 points)

In class, we discussed six possible inventory accounting systems, using (FIFO, LIFO, average cost) x (perpetual, periodic). For the following starting inventory and transactions, determine what the lowest and highest possible COGS is across these six system choices.

1. Started with 50 units at $40 each.
2. Sold 20 units.
3. Purchased 50 units at $60 each
4. Sold 60 units.
5. Purchased 50 units at $50 each
6. Sold 50 units.

	Perpetual FIFO	Perpetual LIFO	Perpetual average cost
1	50 @ 40	50 @ 40	50 @ 40
2	30 @ 40	30 @ 40	30 @ 40
3	30 @ 40, 50 @ 60	50 @ 60, 30 @ 40	80 @ 52.5
4	20 @ 60	20 @ 40	20 @ 52.5
5	20 @ 60, 50 @ 50	50 @ 50, 20 @ 40	70 @ 50.71
6	20 @ 50	20 @ 40	20 @ 50.71

	Periodic FIFO	Periodic LIFO	Periodic average cost
Inventory	50 @ 40, 50 @ 60, 50 @ 50	50 @ 50, 50 @ 60, 50 @ 40	150 @ 50
Sold	130	130	130
Remaining	20 @ 50	20 @ 40	20 @ 50

COGS:

- = Starting inventory + purchases – remaining inventory
- = 2000 + 5500 – Remaining inventory
- = 7,500 – Remaining inventory
- Perpetual FIFO = 7,500 – 1,000 = 6,500
- Perpetual LIFO = 7,500 – 800 = 6,700
- Perpetual average cost = 7,500 – 1,014.20 = 6,485.80
- Periodic FIFO = 7,500 – 1,000 = 6,500
- Periodic LIFO = 7,500 – 800 = 6,700
- Periodic average cost = 7,500 – 1,000 = 6,500

Lowest COGS:	**6,485.80**	**System for lowest COGS:**	**Periodic Average Cost**
Highest COGS:	**6,700**	**System for highest COGS:**	**LIFO (both)**

Commented [RC1]: 1 point for minimum, 1 point for maximum

Partial credit given for work shown.

Commented [RC2]: Note that Average cost can be below (or above) FIFO and LIFO when inventory purchase prices are not monotonic. Since the purchase prices here are 40, 60, then 50, they are not monotonic.

If purchase prices were monotonic, then you would not need to check this.

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PP&E Question, Part A (3 points)

The Hill Company purchased some equipment at July 1, 2008, for $16,000. Hill also paid freight costs $1,500 and sales tax $500 in addition. Hill's fiscal year starts from January 1. Upon receipt, the following expenditures were incurred in 2008:

Major repair prior to use	$1,000
Installation	$600
Testing prior to use	$400
Operating costs after start of production	$1,500
Minor repair and maintenance after start of production	$500

The company adopted a straight-line depreciation method and estimated that the useful life of the equipment to be ten years from July 1, 2008. Hill expects that the salvage value of the equipment will be $2,000 at the end of the useful life.

Required:
1) Determine the total depreciable value of the equipment, i.e., the total amount that will be depreciated over the life of the equipment.

Cost = 16,000 + 1,500 + 500 + 1,000 + 600 + 400 = 20,000
(Include the blue highlighted costs, ignore red highlighted costs)
Total depreciation over the equipment's life = cost – salvage value = 20,000 – 2,000 = 18,000

Total depreciable value:	**18,000**

2) Determine the book value of the equipment at December 31, 2008.

On December 31, 2008, the equipment will have depreciated by 6 months.
Depreciation = (20,000 – 2,000)/10 x 6/12 = 900

Book value (i.e., NAV) = Cost – Accumulated depreciation = 20,000 – 900 = 19,100

Net asset value, Dec 31:	**19,100**

3) Hill received an offer to sell the equipment at January 1, 2009. If Hill sold the equipment for $23,000 in cash, what journal entry would they record for the sale of the equipment? No entry explanation is required.

DATE	ACCOUNTS	DR	CR
JAN 1	Cash	23,000	
	Acc. Depr. -- Equipment	900	
	Gain on asset sale		3,900
	Equipment		20,000

Commented [RC3]: 1 point per calculation or journal entry

Partial credit given for part 1 if cost is correct.
Partial credit for part 2 if substantial progress made.
Partial credit for part 3 if substantial progress made.

Commented [RC4]: Make sure to record this at historical cost (i.e., what is in the general ledger). If you put the NAV here, you are double counting accumulated depreciation, since we already have accumulated depreciation in this entry and NAV = Cost – Accumulated Depreciation.

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PP&E Question Part B (2 points)

Commented [RC5]: 1 point per calculation

Partial credit for part 1 if substantial progress made.
Partial credit for part 2 if substantial progress made.

Hill Company has another piece of equipment with a net asset value of $22,000 as of January 1, 2009. In early 2009, a major improvement to the equipment took place, costing $900. As a result, the annual capacity of the equipment was expanded, leaving it with 10 years of useful life and a salvage value of $2,000. In early 2010, due to signs of severe wear, Hill revised the equipment's estimated useful life to be only five remaining years from January 1, 2010 with a salvage value of $1,000.

Required:
1) Determine the amount of depreciation expense for the equipment on Dec 31, 2009.

Depreciation: (22,900 – 2,000)/10 = 1,890

Depr. Expense, 2009	**2,090**

2) Determine the amount of depreciation expense for the equipment on Dec 31, 2010.

New asset value = Old NAV = 22,900 – 2,090 = 20,810

Depreciation: (20,810 – 1,000)/5 = 3,962

Depr. Expense, 2010	**3,962**

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Intangibles Question (3 points)

In 2006, Toshiba acquired Westinghouse, a nuclear reactor company, for $5.4 billion US dollars. Assume that Westinghouse's net assets (market value of assets – liabilities) were worth $3.1 billion dollars at the time of the acquisition.

In 2011, the well-known Fukushima Daiichi nuclear disaster occurred, drastically decreasing demand for nuclear reactors across the globe. At the time, Toshiba insisted that the Westinghouse was unaffected, due to high demand for its other services (such as nuclear reactor maintenance). However, due to pressure from their auditor, PwC, Toshiba proceeded to take a $2.3 billion US dollar impairment charge to goodwill in 2016, 5 years later.

In the end, Toshiba decided to sell off the Westinghouse group to Brookfield, a Canadian asset managing firm, in January of 2018. Brookfield will acquire the firm for 4.6 billion US dollars, by paying 4 billion US dollars in cash, and assuming 600 million US dollars of Westinghouse's liabilities.

References:

Toshiba sells nuclear group Westinghouse in $4.6bn deal, Financial Times
Toshiba admits to a ruinous overpayment for an American nuclear firm, The Economist

1. Record the initial purchase of Westinghouse, from Toshiba's perspective (in USD).

DATE	ACCOUNTS	DR	CR
	Westinghouse net assets	3.1B	
	Goodwill	2.3B	
	Cash		5.4B

2. Record the subsequent goodwill impairment.

DATE	ACCOUNTS	DR	CR
	Impairment expense	2.3B	
	Goodwill		2.3B

3. Record the sale of Westinghouse from Toshiba's perspective, using the following simplifying assumption. Treat Westinghouse as two accounts: one big PP&E asset (call it "Westinghouse assets"), and one big liability ("Westinghouse liabilities"). Further, assume that the only change in Westinghouse's assets and liabilities while owned by Toshiba was the goodwill impairment.

DATE	ACCOUNTS	DR	CR
	Cash	4B	
	Westinghouse liabilities	0.6B	
	Westinghouse assets		3.7B
	Gain on asset sale		0.9B

Commented [RC6]: 1 point per journal entry

Partial credit for part 1 if substantial progress made.
Partial credit for part 2 if substantial progress made.
Partial credit for part 3 if substantial progress made.

Commented [RC7]: This is 3.7B as the net assets = 3.1B and liabilities = 0.6B.

3.1B = Assets – 0.6B => Assets = 3.7B.

No points taken off if this was missed and you put 3.1B for assets and 1.5B for gain on asset sale, equivalent to assuming that the liabilities were acquired while Westinghouse was owned by Toshiba.