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## Students' Department

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# Students' Department

H. A. FINNEY, *Editor*

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## AMERICAN INSTITUTE EXAMINATIONS

(NOTE.—The fact that these solutions appear in THE JOURNAL OF ACCOUNTANCY should not cause the reader to assume that they are the official solutions of the board of examiners. They represent merely the opinions of the editors of the *Students' Department*.)

### EXAMINATION IN ACCOUNTING THEORY AND PRACTICE—PART I

November 17, 1927, 1 P. M. to 6 P. M.

*The candidate must answer the first three questions and one other question.*

#### No. 1 (48 points):

The Pacific Logging Company completed its first year of logging operations on December 31, 1926. A list of balances from the company's ledger (before closing) at December 31, 1926, was as follows:

Capital stock . . . . .		\$4,200,000
First mortgage 7% bonds . . . . .		700,000
Timber . . . . .	\$4,000,600	
Booming ground . . . . .	9,000	
Main railroad . . . . .	\$309,641	
Subsidiary railroad . . . . .	235,000	
	544,641	
Logging engines, machinery and camp equipment . . . . .	703,000	
Cash in bank and on hand . . . . .	23,250	
Notes and accounts receivable . . . . .	113,700	
Notes and accounts payable . . . . .		40,737
Furniture and fixtures—city office . . . . .	2,137	
Unexpired insurance premiums . . . . .	4,134	
Reserve—depreciation . . . . .		72,210
Wages accrued . . . . .		23,780
Property taxes accrued . . . . .		59,575
Labor and expenses:		
Felling and sawing . . . . .	96,075	
Yarding and loading . . . . .	102,460	
Scalers . . . . .	8,837	
Rigging . . . . .	33,273	
Hauling . . . . .	135,040	
Booming and rafting . . . . .	13,577	
	389,262	
Sales . . . . .		974,500
Maintenance—railroads . . . . .	32,015	
"    —camp . . . . .	4,710	
	36,725	
Depreciation—logging engines, machinery and camp equipment . . . . .	\$71,997	
Depreciation—city office furniture and fixtures . . . . .	213	
	\$72,210	

*The Journal of Accountancy*

Insurance—industrial . . . . .	\$13,403	
"    —on equipment (fire) . . . . .	8,075	
		\$21,478
Property taxes . . . . .		59,575
Superintendence . . . . .		11,970
Administrative salaries . . . . .		19,415
Interest—on bonds . . . . .	49,000	
"    —on notes payable . . . . .	1,647	
		50,647
Fire-patrol expense . . . . .		4,733
City office expense . . . . .		4,325
		\$6,070,802
		\$6,070,802

In arriving at the results of its operations for the year 1926, the company's officers had not considered depletion of timber cut for the year nor the amount which should be charged to cost of operations in respect of amortization of railway construction.

The trustees for the bondholders require a statement of profit and loss for the year 1926 showing the average cost of logs cut and of logs sold, also a balance-sheet as at December 31, 1926.

The following information is obtained from the records of the company:

Total standing timber acquired at inception of company:

	Feet	Cost per M feet	Total cost
Yellow fir . . . . .	700,450,000	\$4.00	\$2,801,800
Hemlock . . . . .	300,200,000	1.20	360,240
Cedar . . . . .	48,600,000	4.00	194,400
Spruce . . . . .	113,915,000	4.00	455,660
Red fir . . . . .	75,400,000	2.50	188,500
	1,238,565,000		\$4,000,600

Logs cut during the year 1926:

Yellow fir . . . . .	51,000,000	feet
Hemlock . . . . .	14,000,000	"
Cedar . . . . .	1,800,000	"
Spruce . . . . .	6,810,000	"
Red fir . . . . .	2,250,000	"

Logs sold during the year 1926:

Yellow fir . . . . .	45,400,000	ft. @	\$15.00	per	M	ft.
Hemlock . . . . .	12,500,000	"	12.50	"	"	"
Cedar . . . . .	1,800,000	"	15.00	"	"	"
Spruce . . . . .	4,250,000	"	18.00	"	"	"
Red fir . . . . .	2,250,000	"	15.00	"	"	"

There was used by the company for the construction of donkey sleds, during the year, 100,500 feet of yellow fir, which is included in the foregoing figures representing the timber cut during 1926. The cost of logs so used for construction purposes is to be added to capital expenditures at the average cost of production of all logs cut for the year, the construction labor cost thereon having been ascertained to be already included in the equipment account.

The inventory of logs "in pond" as scaled (i. e. ready for sale) at December 31, 1926, was as follows:

Yellow fir . . . . .	5,499,500	feet
Hemlock . . . . .	1,500,000	feet
Spruce . . . . .	2,560,000	feet
	9,559,500	feet

*Students' Department*

The inventory is to be valued at the average cost of all logs cut during the year, no segregation of costs to be made on the various kinds of timber cut.

In addition to the logs cut, as above recorded, there were 500,000 feet of yellow fir logs and 500,000 feet of spruce logs lying in the woods, felled and sawed, and the cost of felling and sawing such logs is included as part of the operating expenses for the year 1926 on the company's books. These logs are to be valued at stumpage cost, plus felling and sawing cost only, as no other costs are applicable thereto.

The railway construction is described in the accounts as main railroad and subsidiary railroad. The main railroad is a completed unit and all the company's standing timber will have to be hauled over that road as cut. The subsidiary railroad is not a completed unit. When completed, the total cost is estimated to be \$540,000. The standing timber to be hauled over the subsidiary railroad is 600,000,000 feet. When the timber is all cut both railroads are to be considered as being of no further use and to have no salvage value. Of the total timber cut for the year 1926, 40,000,000 feet were cut from the standing timber adjacent to, and hauled over, the subsidiary railroad.

Depreciation has been provided on all plant and equipment and is to be considered adequate.

An examination of the accounts receivable disclosed worthless accounts amounting to \$5,500.

From the foregoing list of balances and supplementary information, prepare the statements desired by the trustees for the bondholders and submit details of the adjustments of accounts considered necessary by you, ignoring income-tax features.

*Solution:*

PACIFIC LOGGING COMPANY		<i>Exhibit 1</i>
Statement of cost of logs cut and sold for the year ended		
December 31, 1926		
		Per M feet
Depletion (schedule A) (76,860,000 feet)	\$264,865.00	\$3.446
Operating expenses:		
Logging costs:		
Felling and sawing . . . . .	\$96,075.00	
Yarding and loading . . . . .	102,460.00	
Scaling . . . . .	8,837.00	
Rigging . . . . .	33,273.00	
Maintenance of camp . . . . .	4,710.00	
Depreciation of logging engines, machinery and camp equip- ment . . . . .	71,997.00	
Industrial insurance . . . . .	13,403.00	
Fire insurance on equipment . . . . .	8,075.00	
Taxes . . . . .	59,575.00	
Superintendence . . . . .	11,970.00	
Fire-patrol expense . . . . .	4,733.00	
Booming and rafting . . . . .	13,577.00	
Total logging costs . . . . .	<u>\$428,685.00</u>	5.578
Transportation costs:		
Hauling . . . . .	\$135,040.00	
Maintenance of railways . . . . .	32,015.00	
Amortization of railroad construction:		
Main line . \$18,965.00 (1a)		
Subsidiary 36,000.00 (1b)		
	<u>54,965.00</u>	
Total transportation costs . . . . .	<u>222,020.00</u>	2.889
Total operating expense . . . . .	<u>650,705.00</u>	<u>\$8.467</u>

Schedule A

PACIFIC LOGGING COMPANY

Statement showing computation of depletion for the year ended December 31, 1926

	Yellow fir	Hemlock	Cedar	Spruce	Red fir	Total
Log sales.....	45,400,000 ft.	12,500,000 ft.	1,800,000 ft.	4,250,000 ft.	2,250,000 ft.	66,200,000 ft.
Used in construction of donkey sleds.....	100,500					100,500
Felled and sawed only.....	500,000			500,000		1,000,000
Inventory "in pond" December 31, 1926.....	5,499,500	1,500,000		2,560,000		9,559,500
Total feet cut.....	51,500,000 ft.	14,000,000 ft.	1,800,000 ft.	7,310,000 ft.	2,250,000 ft.	76,860,000 ft.
Cost per M feet.....	\$4.00	\$1.20	\$4.00	\$4.00	\$2.50	
Total cost of timber cut.....	\$206,000.00	\$16,800.00	\$7,200.00	\$29,240.00	\$5,625.00	\$264,865.00

*Students' Department*

Total production costs .....	\$915,570.00	\$11.913
Less: Inventory of logs felled and sawed (1,000,000 feet) .....	5,250.00 (2)	
<hr/>		
Total cost of logs completely cut (75,860,000 feet) .....	\$910,320.00	\$12.00
Less: Cost of logs used in construction of donkey		
sleds (100,500 feet) .....	\$1,206.00 (3)	
Inventory of logs in pond (9,559,500 feet) ....	114,714.00 (4)	
<hr/>		
	115,920.00	12.00
<hr/>		
Cost of logs sold (66,200,000 feet) .....	\$794,400.00	\$12.00*
<hr/>		

\* This cost is based on an average of the stumpage costs for various classes of timber as well as an average of the other costs. It would seem more logical to charge each class of timber with the actual stumpage cost per M (being the stated price for the standing timber purchased) and average only the other costs. This procedure would, however, appear to be in conflict with the terms of the problem, which states "no segregation of costs (is) to be made on the various kinds of timber cut."

(1) Computation of the cost of the amortization of railway construction:

(a) Main railroad:

Cost of main railroad ..... \$309,641.00  
 Total standing timber at inception of company... 1,238,565,000 ft.  
 Therefore, \$309,641.00 ÷ 1,238,565 M feet = \$.25, the cost per M feet of timber hauled.  
 Total feet hauled over main railroad during the  
 year 1926..... 75,860,000 ft.  
 75,860 M feet × \$.25 = \$18,965, the amount of amortization for the year 1926.

(b) Subsidiary railroad:

Estimated total cost of subsidiary railroad..... \$540,000.00  
 Total feet of timber to be hauled by subsidiary rail-  
 road when completed..... 600,000,000 ft.  
 Therefore, \$540,000.00 ÷ 600,000 M feet = \$.90, the cost per M feet of timber to be hauled over the subsidiary railroad.  
 Total feet hauled over subsidiary railroad during  
 the year 1926..... 40,000,000 ft.  
 40,000 M feet × \$.90 = \$36,000.00, the amount of the amortization for the year 1926.

While it may appear incorrect to base the amortization of the subsidiary railroad on the total estimated cost instead of on the cost to date, there are good practical and theoretical reasons for doing so.

If amortization were based on the cost to date, the rate for 1926 should be obtained by dividing that cost by the number of M feet transportable over the constructed road. The problem does not give this information.

Moreover, the rate would be increased with each additional construction expenditure, with a resulting variation in the cost per M feet for transporting logs over the subsidiary railroad. This might be correct except for the illogical possibility of applying two different rates to logs from approximately the same location in the tract but transported during different years.

*The Journal of Accountancy*

(2) Inventory of logs, felled and sawed only:

Kind	Feet	Cost per	
		M feet	Cost
Yellow fir.....	500,000	\$4.00	\$2,000.00
Spruce.....	500,000	4.00	2,000.00
Total.....	1,000,000		\$4,000.00
Add:			
Cost of felling and sawing			
( $\frac{1,000 \text{ M}}{76,860 \text{ M}} \times \$96,075.00$ ).....			1,250.00
Total cost.....	1,000,000		\$5,250.00

(3) Cost of logs used for the construction of donkey sleds:

As shown in the statement of cost of logs cut and sold (exhibit 1), the rate per thousand feet is \$12.00. Therefore, the cost of the logs used for the construction of donkey sleds is 100.5 M feet  $\times$  \$12.00 or \$1,206.00. This entire amount is capitalized as required by the problem.

(4) Inventory of logs "in pond":

The cost of logs in pond is determined as follows:

$$9559.5 \text{ M feet} \times \$12.00 = \$114,714.00$$

*Exhibit 2*

PACIFIC LOGGING COMPANY

Statement of profit and loss for the year ended December 31, 1926

		Per M feet
Sales:		
Yellow fir.....	45,400,000 ft. @ \$15.00 M	\$681,000.00
Hemlock.....	12,500,000	156,250.00
Cedar.....	1,800,000	15.00
Spruce.....	4,250,000	18.00
Red fir.....	2,250,000	15.00
	66,200,000 ft.	\$974,500.00
Cost of logs sold (exhibit 1).....		794,400.00
Gross profit.....		\$180,100.00
General expenses:		
Administrative salaries.....	\$19,415.00	
City office expense.....	4,325.00	
Depreciation of office fixtures.....	213.00	
Bad debts.....	5,500.00	
Total general expense.....		29,453.00
Profit from operations.....		\$150,647.00
Interest charges:		
Interest on bonds.....	\$49,000.00	
Interest on notes payable.....	1,647.00	
Total interest charges.....		50,647.00
Net profit to surplus.....		\$100,000.00

*Students' Department*

PACIFIC LOGGING COMPANY  
Balance-sheet, December 31, 1926

*Exhibit 3*

<i>Assets</i>			
<b>Current assets:</b>			
Cash in bank and on hand.....		\$23,250.00	
Notes and accounts receivable.....		108,200.00	
<b>Inventories:</b>			
Logs "in pond".....	\$114,714.00		
Logs felled and sawed.....	5,250.00	119,964.00	\$251,414.00
Unexpired insurance.....			4,134.00
<b>Capital assets:</b>			
	Cost	Reserve for depreciation, depletion and amortization	Carrying value
Timber.....	\$4,000,600.00	\$264,865.00	\$3,735,735.00
Booming ground.....	9,000.00		9,000.00
Main railroad.....	309,641.00	18,965.00	290,676.00
Subsidiary railroad.....	235,000.00	36,000.00	199,000.00
Logging engines, machinery and equipment.....	703,000.00	71,997.00	631,003.00
Furniture and fixtures, city office.....	2,137.00	213.00	1,924.00
Donkey sleds.....	1,206.00		1,206.00
	<u>\$5,260,584.00</u>	<u>\$392,040.00</u>	<u>4,868,544.00</u>
			<u><u>\$5,124,092.00</u></u>

<i>Liabilities and net worth</i>			
<b>Current liabilities:</b>			
Notes and accounts payable.....		\$40,737.00	
Wages accrued.....		23,780.00	
Property taxes accrued.....		59,575.00	
First mortgage 7% bonds.....			\$124,092.00
<b>Net worth:</b>			
Capital stock.....		\$4,200,000.00	
Surplus net profit for year ended December 31, 1926 (exhibit 2).....		100,000.00	4,300,000.00
			<u><u>\$5,124,092.00</u></u>

No. 2 (10 points):

Alton, Locke and King are in partnership, their respective capitals and shares of profits being as follows:

Alton.....	\$60,000	40%	
Locke.....	40,000	30%	
King.....	20,000	30%	
		<u>\$120,000</u>	<u>100%</u>

It is arranged to admit Darwin as a partner with a twenty per cent. interest in the profits, he to contribute as additional partnership capital a sum proportionate to his interest together with an equal amount for goodwill.

- (1) How much cash must Darwin contribute in all?
- (2) In what proportion will the profits be divided between the four partners?
- (3) How should the goodwill be treated?



*Solution:*

(1) It seems clear from the wording of the problem that the entire amount to be contributed by Darwin will constitute additional partnership capital. It is necessary to make an assumption, however, as to the amount to be credited to Darwin's capital account.

If it is assumed that the amount contributed for goodwill is to be credited to the old partners as compensation for the goodwill which they developed, the following solution can be amply defended.

On this assumption, the amount to be credited to Darwin's capital account will be one half of his total contribution and will be "a sum proportionate to his interest." The only interest mentioned, so far as Darwin is concerned, is the 20 per cent. interest in the profits.

A contribution to the partnership capital by Darwin of a sum proportionate to his interest would, then, mean a contribution of 20 per cent. of the total capital of the new partnership. But Darwin's contribution "as additional partnership capital" is twice the amount of "a sum proportionate to his interest." Therefore, the amount contributed by Darwin will be 40 per cent. of the total capital of the new partnership. It follows then that the contribution of Alton, Locke and King, the members of the old partnership, will constitute 60 per cent. of the total capital of the new partnership. The amount of this 60 per cent. contribution we know to be \$120,000.

Hence, if 60 per cent. equals \$120,000 it follows that 100 per cent. equals \$200,000.

Darwin's contribution must, therefore, be

(a) a sum proportionate to his interest (20% of \$200,000)	\$40,000
plus (b) an equal amount for goodwill. . . . .	40,000
	\$80,000
A total contribution of. . . . .	\$80,000

The amount of Darwin's contribution may also be computed algebraically as follows:

Let  $X$  equal amount to be contributed by Darwin.

Then  $\$120,000 + X$  equals total capital of new partnership.

Given:

$$\frac{1}{2}X \text{ equals } \frac{1}{5} (\$120,000 + X)$$

Then:  $5 X$  equals  $\$240,000 + 2 X$

$3 X$  equals  $\$240,000$

$X$  equals  $\$80,000$ , Darwin's contribution.

(2) When a new partner is admitted, a new partnership is created and the old one is automatically dissolved. Therefore, we must look to the agreement under which the new partnership is formed for information as to the division of profits. The only reference in this case as to any agreement for division of the profits of the new partnership is to Darwin's interest in the profits which is stated to be 20 per cent. Following the principle that when not stated to be otherwise profits in a partnership are to be divided equally, it would seem that

## *Students' Department*

the remaining 80 per cent. of the profits would be divided equally between Alton, Locke and King, that is,  $26\frac{2}{3}$  per cent. of the total profits to each. However, there may be an implied agreement to the effect that, as to the three members of the old partnership, the basis prevailing in the old partnership should be carried into the new partnership and that the 80 per cent. of the total profits remaining to them should be shared in the old ratio. In that event, the profits of the new partnership would be divided as follows:

Darwin . . . . .	20%
Alton (40% of 80%) . . . . .	32%
Locke (30% of 80%) . . . . .	24%
King (30% of 80%) . . . . .	24%
Total . . . . .	100%

(3) As this question is worded, it might appear necessary to set up goodwill on the books of either the old or the new partnership. Further analysis, however, shows that such procedure is not necessary.

The capital contributed to the new partnership by Alton, Locke and King amounts to \$120,000. Darwin's contribution amounts to \$80,000. Total contributions, therefore, amount to \$200,000, the capital of the new partnership. Hence, it is not necessary to place a goodwill account on the books. Darwin contributes \$80,000 and receives credit in his capital account for \$40,000. The remaining \$40,000 will be credited to the accounts of Alton, Locke and King as a bonus. This bonus will be divided among Alton, Locke and King in the same ratio as profits were shared in the old partnership and the capital accounts of the members of the new partnership will be as follows:

Alton:		
Capital account in old partnership . . . . .	\$60,000	
Share of \$40,000 bonus (40%) . . . . .	16,000	
		\$76,000
Locke:		
Capital account in old partnership . . . . .	\$40,000	
Share of \$40,000 bonus (30%) . . . . .	12,000	
		52,000
King:		
Capital account in old partnership . . . . .	\$20,000	
Share of \$40,000 bonus (30%) . . . . .	12,000	
		32,000
Darwin (half of total contribution of \$80,000) . . . . .		40,000
Total . . . . .		\$200,000

On the other hand, it is equally reasonable to assume that Darwin is to have a one-fifth interest in the capital, and that, since he pays in as goodwill an amount equal to his remaining contribution, the old business has a goodwill of

*The Journal of Accountancy*

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\$120,000 as well as its other capital of \$120,000. Then the matter might be handled as follows:

Goodwill.....	\$120,000
Alton.....	\$48,000
Locke.....	36,000
King.....	36,000

To place the goodwill of the old partnership on the books, crediting the partners in their profit-and-loss ratio.

This makes the total capital of the old partnership \$240,000 which is 80 per cent. of the capital of the proposed new partnership. The total capital of the new partnership will therefore be \$300,000. Darwin should pay in and be credited with \$60,000.

If it is not desired to place a goodwill account on the books, the matter may be handled as follows:

	Alton	Locke	King	Darwin	Total
Original capitals.....	\$60,000	\$40,000	\$20,000		\$120,000
Goodwill credits, if recorded..	48,000	36,000	36,000		120,000
Cash contribution.....				\$60,000	60,000
<b>Total.....</b>	<b>\$108,000</b>	<b>\$76,000</b>	<b>\$56,000</b>	<b>\$60,000</b>	<b>\$300,000</b>
Charges, if goodwill is subsequently written off.....	38,400	28,800	28,800	24,000	120,000
<b>Balance.....</b>	<b>\$69,600</b>	<b>\$47,200</b>	<b>\$27,200</b>	<b>\$36,000</b>	<b>\$180,000</b>
Original capitals.....	60,000	40,000	20,000		120,000
<b>Credits for Darwin's contribution.....</b>	<b>\$9,600</b>	<b>\$7,200</b>	<b>\$7,200</b>	<b>\$36,000</b>	<b>\$60,000</b>

ERRATUM

On page 461 of the December, 1927, issue of THE JOURNAL OF ACCOUNTANCY, the amount of goodwill in the consolidated working papers is shown as \$19,000.00. This is a typographical error. The correct amount of goodwill is \$9,000.00, as shown in the consolidated balance-sheet which appears immediately following the consolidated working papers.