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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 answers of the board of examiners. They represent merely the opinion of the editors of the *Students' Department.* Solutions of problems 2 and 3 of part I appeared in the January number.)

EXAMINATION IN ACCOUNTING THEORY AND PRACTICE—PART I

NOVEMBER 12, 1925, 1 P. M. to 6 P. M.

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

No. 1 (*25 points*):

A large manufacturing concern operates the following producing departments:
(a) Quarry, where mineral is extracted.
(b) Railroad, 20 miles in length, from quarry to main plant.
(c) Main plant, divided into—
Foundry and rolling mill.
Process plant, where mineral is treated.
Machinery department, where foundry product is finished, and
Assembling department, where treated mineral and metal parts are combined into finished product.

A salvage department is operating at the main plant, the function of which is to dispose of all discarded material either as scrap or—if possible to repair or recondition profitably—as material to be reissued for operation or construction.

From the following data, determine
(1) The amounts to be credited the department from which the material is taken and whether credit is to operation or to a fixed-asset account.
(2) The prices at which to be taken into salvage stock, and
(3) Discuss generally and briefly the principles governing price at which salvaged material should be charged out and how savings due to salvage operations should be shown.

Material	Quantity	Weight	Price (new)	Depreciated value	Cost to repair or recondition	Scrap value
Belting from lathe.	20 ft.		$12	$3	$2.50	$ None
Pulleys from lathe shafting.....	5	150 lbs.	60	20	10.00	1.50
Rock drills.....	20	200 "	20		5.00	2.25
Defective castings made in foundry.	7	700 "	70		80.00	7.00
R. R. ties.....	500		500		impossible	50.00
Lead-covered power transmission cable—quarry	300 ft.	1,200 "	240	48	"	144.00
Brass borings.....		500 "				50.00
Electric motors—machinery department.....	3		450	45	120.00	60.00
Large bolts—quarry	150	120 "	30		5.00	1.20
Copper boiler-tube from locomotives		50 "	15		impossible	6.50
Grinding rolls—process department.....	10	1,000 "	200	20	120.00	10.00

Material	Quantity	Weight	Price (new)	Depreciated value	Cost to repair or recondition	Scrap value
Gears for grinding rolls—made in own foundry....	20	400 lbs.	$100	$10	$115.00	$4.00
Steel tanks—process department.	5	10,000 "	500	100	425.00	100.00
Plates and angle-iron from assembling department building.....		8,000 "	320		impossible	80.00
General expense of salvage department....				$1,000	per month	
Turnover in money—about.....				100,000	" "	

Solution:

In general, the operation of the salvage department should not result in the taking up of any profit, as profits are made by sales and not by reconditioning fixed assets or by making good damages to product in process. If, however, the book value of fixed assets salvaged is less than their scrap value, the cost after rehabilitation can usually be properly shown as the sum of the scrap value and the reconditioning cost. Thus a credit to income (or a correction of surplus on account of excessive depreciation charges) does result, but the credit would arise even if the property were not reconditioned, because it has a salable value in excess of its book value. It seems proper, therefore, to take the property into the accounts at the amount which could be obtained for it as scrap, plus the cost of salvaging.

In the case of fixed assets, the property account should be credited with the cost and the reserve charged with the related depreciation, unless the asset has been written down, in which case the property account will be credited with the net book value. In the case of product in process, the material, labor and overhead accounts should be relieved of the accumulated costs, and an overhead account for spoilage costs should be charged with the difference between the accumulated costs and the scrap value.

In the following discussion of the proposed treatment of the several items stated in the problem, it is assumed that the figures shown in the "cost to repair or recondition" column include a proportion of the general expense of the salvage department; if this is not the case the $1,000 of general expense should be prorated over the cost of the property salvaged, thus increasing the total cost at which the property will be charged into salvaged-stock accounts.

As the principles governing the treatment of fixed assets salvaged differ from those governing the treatment of product salvaged, the items given in the problem are considered hereinafter under two general headings of fixed assets and product:

Fixed Assets

	Price (new)	Depreciated value	Scrap value	Cost to repair
Belting from lathe.....	$12.00	$3.00	....	$2.50

Charge the cost of repair to the reserve for depreciation, or relieve the asset account of $12 and the reserve of $9, and set up the repaired asset at $3 (book value) plus $2.50 (repair cost).

	Price (new)	Depreciated value	Scrap value	Cost to repair
Pulleys from lathe shafting.....	$60.00	$20.00	$1.50	$10.00

Charge the cost of repair to the reserve, or relieve the asset and the reserve of $60 and $40, respectively, and charge salvaged stock with $20 plus $10.

Rock drills.....	$20.00	....	$2.25	$5.00

Charge the cost of repair to the reserve, or relieve the asset and reserve accounts and set up the salvaged stock at $7.25, taking credit for $2.25 as a correction of earnings in respect of excess depreciation.

It will be noted that in the first two cases salvaged stock was charged with book value plus repair cost, while in the third case salvaged stock was charged with scrap value plus repair cost. That is, no loss was taken in the first two cases when the scrap value was less than the depreciated value, while in the third case a profit was taken, or rather the profits of prior years were corrected. (It will be noted, however, that in no case is the salvaged stock valued at more than cost new.) The difference in procedure is defended on the following theory. A fixed asset may have no realizable scrap value, and yet its operating value after reconditioning may be greater than the cost to recondition. That is, the asset may be worth reconditioning but not worth selling. As long as the total of the book value and the cost of repair is less than the original cost, it does not appear necessary to take up a loss of the difference between depreciated book value and scrap value. On the other hand, if the book value is less than scrap value the profits have been understated because of excess depreciation. Or viewed in another way, a profit is in sight to be realized by sale. If the asset is not sold the company is out the possible proceeds, and should consider that the repaired asset cost what could have been obtained for the scrap plus the reconditioning cost.

Fixed Assets

	Price (new)	Depreciated value	Scrap value	Cost to repair
Railroad ties.....	$500.00	....	$50.00	impossible

Relieve the asset and reserve accounts, and adjust the earnings in respect of excess depreciation, or take up as earnings the proceeds of the sale of the ties as scrap.

Transmission cable.....	$240.00	$48.00	$144.00	impossible

Relieve the asset and reserve accounts, taking up the scrap value of $144, and an income credit of $96.

Electric meters.....	$450.00	$45.00	$60.00	$120.00

Relieve the asset and reserve accounts, taking up the salvaged stock at $60, with a $15 correction of income.

Large belts.....	$30.00	....	$5.00	$1.20

Relieve the asset and reserve accounts; correct the income in respect of $5 excess depreciation; and take into salvaged stock at $6.20.

Copper boiler tube.....	$15.00	....	$6.50	impossible

Relieve the asset and reserve, taking $6.50 into income as the proceeds of the sale of scrap.

Grinding rolls.....	$200.00	$20.00	$10.00	$120.00

Relieve the asset and reserve accounts, taking the property into salvaged stock at $20 plus $120.

Gears for grinding rolls.....	$100.00	$10.00	$4.00	$115.00

We have here the peculiar condition of a greater cost to repair an old asset than to make a new one, since, after relieving the asset and the reserve accounts, the book value of $10 plus reconditioning costs of $115 makes a total cost of $125 as compared with an original cost of $100. This may be accounted for by an increase in production costs since the property was made. However, regardless of the reason, there appears to be no objection to valuing the salvaged property at $125 provided this is not more than it could be purchased for. Savings on own production should not be taken into income, but there is no obligation to take a loss on production of fixed assets (which would result from writing down the reconditioned asset to $100) unless the cost to produce is an overvaluation as compared with cost to purchase.

	Price (new)	Depreciated value	Scrap value	Cost to repair
Steel tanks	$500.00	$100.00	$100.00	$425.00

After relieving the asset and reserve accounts, and after adding book value and repair expense, we have a total cost of $525 as compared with an original cost of $500. These tanks were not made by the company, and hence the asset should be taken into salvaged stock at $500 unless market costs have increased so that $525 does not represent an overvaluation as compared with present market costs.

Product	Cost (new)	Scrap value	Repair cost
Defective castings	$70.00	$7.00	$80.00

The difference between the total cost, $70, and the scrap value, $7, should be charged to overhead of the department in which the spoilage occurs, unless it is considered that spoilage may be caused in one department and come to light in another, in which case the spoilage may be charged to a general overhead account and distributed over all departments. The salvaged castings will have a total cost of $7 plus $80, but as this is more than cost new, the value should be reduced to $70, with a charge of $17 to profit and loss.

Brass borings	....	$50.00	....

The proceeds of the sale of borings may be credited as a reduction of material costs or overhead costs, or as income. Or if the borings are put into salvaged stock and not immediately sold the stock accounts may be charged with the $50 value.

Plates and angle irons	$320.00	$80.00	impossible

Charge $240 to overhead of the assembly department and take into the salvage department at $80.

No. 4 (*10 points*):

The X company has capital stock issued and outstanding at June 30, 1924, as follows:

5,000 shares 7% cumulative preferred stock, par value $100 per share.
10,000 shares common stock, no par value.

This company manufactures machine units to sell at an average price of $8,500 per unit and does business almost entirely upon a lease-contract basis, accepting from its customers several notes extending over periods ranging from 12 to 36 months.

For the three years ended December 31, 1923, the company's profits have been insufficient to meet preferred dividend requirements.

It is apparent to the board of directors that additional liquid capital is necessary to promote more profitable operation and as no further bank loans can be placed nor can the company discount any more of its customers' notes except at an exorbitant rate, an additional issue of capital stock is decided upon, viz.—5,000 shares of "A" preferred stock without par value but with a nominal value of $20 per share, redeemable at $20 per share at a fixed date and carrying cumulative dividends at the rate of $2 per annum per share. This stock is duly authorized and offered at $20 per share.

The only broker who will handle the stock insists upon a commission of 25% of the selling price, which is approved by the company.

All the stock is sold prior to December 31, 1924, and remittance is made by the broker for the proceeds less $25,000 commission.

At what amount should the "A" preferred stock be shown on the X company balance-sheet at December 31, 1924?

How should the item of $25,000 commission be treated with regard to the company's federal tax return? Give reasons.

Solution:

This problem involves two questions, as follows:

1. Treatment of no-par-value stock sold at less than the nominal value, and,
2. Treatment of commission paid on the sale of capital stock.

1. The capital issues of the company before refinancing would appear in the balance-sheet as follows:

Capital stock:

Preferred 5000 shares 7% cumulative, par value, $100 per share.....	$500,000
No par value, common, 10,000 shares.....	.....

The new "A" preferred stock without doubt ranks after the original preferred stock as to liquidation or dividend payments and before the original no-par-value shares. In event of liquidation the original preferred stock would be paid off without reference to the claims of the "A" preferred stockholders, and the "A" preferred stockholders would be paid off without reference to the claims of the no-par-value stockholders. In view of the fact that, in event of liquidation, the "A" preferred stockholders would have a valid claim for $20 per share or $100,000, it would be advisable to set the "A" preferred stock up at $100,000. The commission paid should be charged to surplus at once or over a reasonable term of years.

2. The regulations issued under the several revenue acts provide as follows:

Article 543.—Sale of capital stock. The proceeds from the original sale by a corporation of its shares of capital stock, whether such proceeds are in excess of or less than the par value of the stock issued, constitute the capital of the company. If the stock is sold at a premium the premium is not income. Likewise, if the stock is sold at a discount, the amount of the discount is not a loss deductible from gross income.

It may be contended that the above-quoted article does not apply on the theory that the company sold the stock at its declared value of $100,000 and then paid the broker a commission of $25,000. However, the following statement: "All the stock is sold prior to December 31, 1924, and remittance is made by the broker for the proceeds less $25,000 commission" indicates that in fact the company actually disposed of this stock for $75,000, and that consequently, in accordance with the above-quoted article, the discount or commission is not deductible from taxable income.

No. 5 (*24 points*):

Companies A and B are close corporations conducting similar businesses. Mr. Lee, the owner of company B, wishes to retire from active management and company A proposes to purchase company B and to amalgamate the two concerns.

Both companies have prepared financial statements for the last five years, which may be taken as correct, and an appraisal company has recently made a valuation of the assets of each company as a going concern.

The following statements are presented and you are requested by Mr. Lee to advise him as to the basis on which an amalgamation should be made and the purchase consideration he should receive.

Draft a statement showing the effect of the combination on terms which would be equitable to both parties: also an adjusted, combined profit-and-loss account on the five years' average, the result of which will form the basis for your recommendations.

COMPANY A

Assets

Land:	
Appraisal valuation, $84,000.	
Present book value, cost	$40,000
Brick buildings:	
Appraised value: replacement, $62,000 less depreciation $12,000; appraised present value $50,000: average annual depreciation charged $4,000.	
Book value	35,000
Machinery and plant:	
Appraised replacement cost $57,500 less depreciation $19,500; appraised present value $38,000: average annual depreciation charged $9,000.	
Book value	21,500
Trucks and cars:	
Appraised replacement cost $22,000 less depreciation $8,000, appraised present value $14,000: average annual depreciation charged $3,500.	
Book value	6,000
Furniture and fixtures:	
Appraised replacement cost $5,000 less depreciation $2,000; appraised present value $3,000: average annual charge of renewals $250.	
Book value	Nil
Loose tools:	
Appraisal values, replacement $8,500 less depreciation $4,500; present appraised value $4,000: average renewals charged to expense $2,000.	
Book value	5
Inventories of finished goods—cost or less	97,000
Accounts and notes receivable—less reserves	250,000
Cash	60,000
Investment:	
100 shares, common stock of X Y Z Co.—cost	15,000
Total assets—Company A	$524,505

Liabilities

Accounts payable	$120,000
First mortgage bonds—6%	50,000
Capital stock—common, issued	50,000
Surplus account, balance	304,505
Total liabilities, etc.—Company A	$524,505

Profit-and-Loss—Average of last five years		
Net profit per annum, after charging expenses, reserves and depreciation		$90,000
Less,		
Directors' salaries—average	$30,000	
Dividends—average	12,500	
		42,500
Average transfer to surplus, per annum		$47,500

COMPANY B

Assets

Land:		
Appraisal valuation, $36,000; cost, $22,000.		
Book value, increased 3 years ago to		$40,000
(The difference, $18,000, was transferred to surplus.)		
Brick buildings:		
Appraised value: replacement $25,000 less depreciation $15,000; present appraised value $10,000: average annual depreciation charged $1,000.		
Book value		15,000
Machinery and plant:		
Appraised value: replacement $22,000 less depreciation $11,000; present appraised value $11,000: average annual depreciation charged $1,100.		
Book value		20,000
Trucks and cars:		
Appraised value: replacement $10,000 less depreciation $7,000; present appraised value $3,000: average annual depreciation charged $1,000.		
Book value		7,000
Loose tools:		
Appraised value: replacement $4,000 less depreciation $2,500; present appraised value $1,500: average annual depreciation charged $700.		
Book value		3,000
Furniture and fixtures:		
Appraised value: replacement $7,000 less depreciation $4,500; present appraised value $2,500: average annual depreciation charged $500.		
Book value		4,500
Inventories, materials and finished goods, at cost plus 10%		53,000
Accounts and notes receivable, less reserves		110,000
Cash		32,000
Investment:		
200 shares, common stock of X Y Z Co.—cost		35,000
Total assets—Company B		$319,500

Liabilities

Accounts and notes payable	$102,500
Capital stock—common, issued	150,000
Surplus account, balance	67,000
Total liabilities, etc.—Company B	$319,500

Profit-and-Loss—Average of last five years

Net profit per annum, after charging expenses, reserves and depreciation	$60,000

Less,		
Dividends—average	$30,000	
Executive salary, Mr. Lee, average	20,000	
		$50,000
Average transfer to surplus, per annum		$10,000

Solution:

A comparison of the appraised present values and the book values of the fixed assets of both companies brings out the very important fact that the appraised present values of company A's fixed assets are considerably larger than the book values, whereas the book values of the fixed assets of company B are larger than the present appraised values. The obvious conclusion is that company B did not write off sufficient depreciation on its fixed assets, and that company A was more liberal in its depreciation charge.

The following schedule shows that in the case of company A, the present appraised value of depreciable assets is $46,495 more than the book value, and in the case of company B is $21,500 less than book value:

	Company A		Company B	
Depreciable assets	Present appraised value	Book value	Present appraised value	Book value
Brick buildings	$50,000.00	$35,000.00	$10,000.00	$15,000.00
Machinery and plant	38,000.00	21,500.00	11,000.00	20,000.00
Trucks and cars	14,000.00	6,000.00	3,000.00	7,000,00
Furniture and fixtures	3,000.00	Nil	1,500.00	3,000.00
Loose tools	4,000.00	5.00	2,500.00	4,500.00
Total	$109,000.00	$62,505.00	$28,000.00	$49,500.00
Excess of present appraised value		46,495.00		
Excess of book value			21,500.00	
	$109,000.00	$109,000,00	$49,500.00	$49,500.00

It will be necessary, therefore, to add to the net profits given in the problem the average amount of depreciation written off and deduct a reasonable depreciation charge to arrive at a fair basis of comparison of the earnings of the two companies.

Statement showing average annual depreciation charge

Asset	Company A	Company B
Brick buildings	$4,000.00	$1,000.00
Machinery and plant	9,000.00	1,100.00
Trucks and cars	3,500.00	1,000.00
Furniture and fixtures	250.00	700.00
Loose tools	2,000.00	500.00
Average depreciation	$18,750.00	$4,300.00

When the above depreciation charges are added back to the profits, we find that, before depreciation, such profits for company A are $108,750 and for company B, $64,300. The problem does not give the age of the various depreciable assets, but by applying a reasonable rate to the present appraised values we find that a fair charge would reduce the above profits to $98,650 for company A and $61,375 for company B.

Kind	Rate per annum	Company A Value	Company A Depreciation	Company B Value	Company B Depreciation
Brick buildings.....	3%	$50,000.00	$1,500.00	$10,000.00	$300.00
Machinery and plant.....	10%	38,000.00	3,800.00	11,000.00	1,100.00
Trucks and cars....	25%	14,000.00	3,500.00	3,000.00	750.00
Furniture and fixtures.....	10%	3,000.00	300.00	1,500.00	150.00
Loose tools.....	25%	4,000.00	1,000.00	2,500.00	625.00
Total.....		$109,000.00	$10,100.00	$28,000.00	$2,925.00

No adjustment is made in the earnings statement of company B for inventory taken up at cost plus 10%, as it is assumed that there has been no wide fluctuation in the inventories at the beginning and end of the period under review. In the following statement of assets and liabilities, however, the 10% added to cost of inventories is eliminated.

The stock of the X Y Z company held by the two companies should be valued on the same basis. In the absence of any specific knowledge as to the value of this stock, that carried by company A is arbitrarily increased to $17,500, or $175 per share, the value at which the stock is carried on the books of company B. A further adjustment on the books of company B is made to eliminate the write-up of $18,000 in the land account "increased three years ago." All of the above adjustments are made as surplus adjustments as shown below, it being assumed that the land write-up has not been included in the average profit as stated in the problem.

	Company A	Company B	Together
Surplus account (per problem).....	$304,505.00	$67,000.00	$371,505.00
Less write-up of land account.....		18,000.00	18,000.00
Remainder.....	$304,505.00	$49,000.00	$353,505.00
Less—Reduction of inventory to cost..		4,818.18	4,818.18
Earned surplus.....	$304,505.00	$44,181.82	$348,686.82
Add—Increase in value X Y Z stock...	2,500.00		2,500.00
Increase (decrease*) in value of fixed assets by appraisal (see below)....	90,495.00	7,500.00*	82,995.00
Surplus as adjusted.....	$397,500.00	$36,681.82	$434,181.82

An accepted method in amalgamations of this type is to issue preferred stock for the net assets and common stock based on the earnings of each company in excess of dividends on preferred stock.

The present appraised value of the fixed assets is a satisfactory basis for determining the amount of preferred stock to be issued to each company. In the following balance-sheets effect has been given to such present appraised values.

COMBINED BALANCE-SHEETS OF COMPANIES A AND B

After giving effect to the present appraised values

Date

Assets	Company A	Company B	Together
Land	$84,000.00	$36,000.00	$120,000.00
Brick buildings	50,000.00	10,000.00	60,000.00
Machinery and plant	38,000.00	11,000.00	49,000.00
Trucks and cars	14,000.00	3,000.00	17,000.00
Furniture and fixtures	3,000.00	1,500.00	4,500.00
Loose tools	4,000.00	2,500.00	6,500.00
Inventories at cost	97,000.00	48,181.82	145,181.82
Accounts and notes receivable	250,000.00	110,000.00	360,000.00
Investment X Y Z Company at $175 per share	17,500.00	35,000.00	52,500.00
Cash	60,000.00	32,000.00	92,000.00
	$617,500.00	$289,181.82	$906,681.82
Liabilities			
Accounts payable	$120,000.00	$102,500.00	$222,500.00
First mortgage, 6% bonds	50,000.00		50,000.00
Capital stock	50,000.00	150,000.00	200,000.00
Surplus	304,505.00	44,181.82	
Write-up of investment X Y Z company	2,500.00		434,181.82
Adjustment of fixed assets to appraised values	90,495.00	7,500.00*	
	$617,500.00	$289,181.82	$906,681.82

On the theory that company B did not provide adequate depreciation in the past, the $7,500 shown above should be treated as a direct charge to the earned-surplus account.

The net assets of the companies as shown above are:

	Company A	Company B	Together
Total assets (per above)	$617,500.00	$289,182.82	$906,681.82
Less—Accounts payable and first mortgage bonds	170,000.00	102,500.00	272,500.00
Net assets	$447,500.00	$186,682.82	$634,181.82

As company A is now paying 6% on its first mortgage bonds, an 8% dividend on the preferred stock would be reasonable.

After making a cash adjustment of $18.18 to avoid fractional shares, 8% preferred stock should be issued on the basis of the net assets turned over to the merging company.

	Net assets	8% preferred issued
Company A	$447,500.00	$447,500.00
Company B	186,700.00	186,700.00
	$634,200.00	$634,200.00

Common stock should be issued for the goodwill or "going value," which is usually determined by capitalizing, at a reasonable rate, the average earnings over a period after deducting all charges. After deducting the depreciation charges which might be reasonably expected, we find the following:

	Company A	Company B	Together
Profits, per problem	$90,000.00	$60,000.00	$150,000.00
Add—Depreciation deducted	18,750.00	4,300.00	23,050.00
Profits before depreciation	$108,750.00	$64,300.00	$173,050.00
Less—Estimated depreciation	10,100.00	2,925.00	13,025.00
Profits after depreciation	$98,650.00	$61,375.00	$160,025.00
Less—Dividends on proposed issue of preferred stock	35,800.00	14,936.00	50,736.00
Net earnings applicable to common stock	$62,850.00	$46,439.00	$109,289.00
Capitalizing the above profits at 16⅔%, we should issue common stock	$377,100.00	$278,600.00	$655,700.00

Fractional shares are again ignored. The rate of 16⅔% is used (1) to keep both classes of stock issued in a relative balance and (2) because it is at the same time a reasonable rate of return to be expected.

Assuming that the amalgamation is effected on the basis of the above proposals, the balance-sheet of the consolidated company would be:

CONSOLIDATED COMPANY BALANCE-SHEET (after amalgamation)

Assets

Current assets:		
Cash	$92,018.18	
Accounts and notes receivable (less reserve)	360,000.00	
Inventories at cost	145,181.82	
Investments—X Y Z company	52,500.00	
		$649,700.00

Fixed assets, at present appraised values:		
Land	$120,000.00	
Brick buildings	60,000.00	
Machinery and plant	49,000.00	
Trucks and cars	17,000.00	
Furniture and fixtures	4,500.00	
Loose tools	6,500.00	
		$257,000.00
Goodwill		655,700.00
Total		$1,562,400.00
Liabilities		
Current liabilities:		
Accounts payable		$222,500.00
First mortgage, 6% bonds		50,000.00
Net worth:		
8% preferred stock	$634,200.00	
Common stock	655,700.00	
		1,289,900.00
Total		$1,562,400.00

If the valuation for goodwill is objected to on the ground that it is too large in proportion to the value of the other assets, the consolidating company could issue shares of no par value. Assuming that this is done and that the shares are given a nominal value of $5.00 each, the goodwill and common-stock value would be changed as follows:

	Shares issued under par-value plan			Shares issued under no-par-value plan		
	Number	Par value each	Total value	Number	Stated value each	Total value
Company A	3,771	$100	$377,100	3,771	$5.00	$18,855.00
Company B	2,786	100	278,600	2,786	5.00	13,930.00
Total	6,557		$655,700	6,557		$32,785.00

It is really immaterial how many shares of common stock are issued or what value is placed on them, as long as the common shares issued to each company are in the ratio of the profits contributed minus the profits to be returned in the form of dividends on the preferred stock.

No. 6 (*24 points*):

The Belgian pre-armistice debt to the United States amounts to $171,800,000. The settlement provides that no interest will be charged on this part of the war debt and that graduated payments on account of principal will be made, totaling $9,400,000, by June 15, 1931, the balance being payable at the rate of $2,900,000 per annum for 56 years.

Assuming an interest rate of 3% per annum, what is the loss to the United States by the waiving of interest calculated at June 15, 1931?

The present value of $1.00 at 3% due in 56 years is $0.1910361 and in 56 years $1.00, at 3%, will amount to $5.2346131.

Solution:

The problem does not call for the total loss from waiving interest on the entire debt, but only on that portion of the debt payable after June 15, 1931. In fact, it would not be possible to determine the loss on the portion paid at and prior to June 30, 1931, because the problem does not state the dates and amounts of these payments. The exclusion of the interest loss on the graduated payments to June 15, 1931, is indicated by the words "calculated at June 15, 1931."

The debt which will be unpaid at this date is determined as follows:

Total debt	$171,800,000
Less payments to June 15, 1931	9,400,000
Balance	$162,400,000

We shall next determine the debt which could be paid with 3% interest by 56 annual payments of $2,900,000.

$1-.1910361=.8089639$, compound discount on 1 for 56 periods at 3%

$.8089639 \div .03 = 26.965463$, present value of annuity of 1 for 56 periods at 3%

$\$2,900,000.00 \times 26.965463 = \$78,199,843$, debt which could be paid with 3% interest in 56 years by annual payments of $2,900,000

$\$162,400,000 - \$78,199,843 = \$84,200,157$, loss of interest

That is to say, annual payments of $2,900,000 will pay a debt of $162,400,000 without interest, or a debt of $78,199,843 with interest at 3%. The difference, $84,200,157, may be regarded either as a loss of principal at June 15, 1931, or as a loss of interest during the 56 years following June 15, 1931, discounted to a present value at, or "calculated at" June 15, 1931.

The problem could also be solved as follows:

If the debt were to bear interest at 3% the annual payments would be $162,400,000 divided by $26.965463 (the present value of an annuity of 1) or $6,022,519. But as only $2,900,000 is received annually, the difference, $3,122,519, is interest lost each year over the period of 56 years. The present value of this annuity of lost interest, "calculated at June 15, 1931," is $3,122,519 × 26.965463, or $84,200,171.

Contingent Losses on Sales Commitments

Editor, Students' Department:

SIR: I wonder if you will kindly give me an answer to the following question which pertains to a matter of accounting?

The fiscal year of the John Smith Company ends September 30th. During the fiscal year ended September 30, 1925, the raw material, which constitutes a considerable part of the cost of the product of the John Smith Company, underwent a considerable advance in price. During the early part of the fiscal year ended September 30, 1925, the John Smith Company entered into agreements

with some of its customers, these agreements being agreements to sell the product of the John Smith Company to these customer companies in accordance with their requirements and on a price basis which was premised upon raw-material prices lower than those prevailing at September 30, 1925. These agreements to sell expire two or three months subsequent to September 30, 1925.

The management of the John Smith Company estimates its maximum loss on these agreements at $1,000,000. In other words, it estimates that if these customers call upon the John Smith Company to deliver its product in accordance with these agreements—and there is no reason to expect that the customers will not do so—the John Smith Company will realize $1,000,000 less on these sales than the cost of manufacturing the product for these sales.

In setting up its balance-sheet as of September 30, 1925, the John Smith Company carries its inventory at cost or market price, whichever is lower, and it sets up on the liability side of the balance-sheet an item termed "Reserve for general contingencies—$1,000,000," which represents the estimated loss.

It is now desired that this balance-sheet be classified as between current assets and current liabilities, and the question arises as to where this reserve belongs. Should it be treated as a current item (either a deduction from current assets or an addition to current liabilities) or should it be treated as a reserve (outside of the current position) and termed "Reserve for general contingencies"?

In further explanation of the question, it should be said that the $1,000,000 has been charged to the income account for the fiscal year ended September 30, 1925.

Thanking you in advance for your kind consideration of this matter, I am

Yours truly,

J. P. R.

New York.

It seems clear that the reserve should enter into the balance-sheet reflection of the current position. The principle underlying the accepted procedure of valuing inventories at the lower of cost or market, is that prospective losses on the realization of inventories should be anticipated; indeed, that prospective failures to make as much profit as customary should be anticipated as losses. The mere writing down of the inventory to the lower of cost or market in the above-described case does not completely fulfill the requirements of this principle, as there are other losses in sight.

If the inventory, valued at the lower of cost or market at September 30th, stands at, say $4,000,000, and if it will require a total expenditure of $3,000,000 for labor and overhead expense to convert it into finished goods which will have to be sold for $6,000,000, then the sale for $6,000,000 will result in recovering the $3,000,000 expenditures yet to be made for labor and overhead, but will result in a realization of only $3,000,000 for the raw materials.

The reserve should not be shown as a current liability; it is not a debt, and if it were included among the liabilities, the current ratio would be distorted by an overstatement of the realizable value of the current assets and the inclusion among the liabilities of an item which is not a liability.

It would appear that the condition would be most clearly shown in some manner similar to the following:

Inventory of raw material, at the lower of cost or market at September 30, 1925.....	$4,000,000	
Less reserve for estimated contingent loss on disposal as finished goods under existing contracts.....	1,000,000	
		$3,000,000

PROBLEM NUMBER TWO

Editor, Students' Department:

SIR: I am much interested in the answer given in the January number of THE JOURNAL OF ACCOUNTANCY to question 2, part 1, of the Institute's November 12th examination.

Perhaps I misunderstand the problem and maybe I misunderstand the answer but it seems to me that you have made one fundamental error in the answer and have neglected to consider two important factors. The two important factors which you have neglected to consider are:

1. According to the problem, on an increasing payroll there is a decreasing premium. This would indicate to my mind that the current rates are lower than the prior rates and that therefore your method of obtaining the average rate is incorrect.

2. It is usual in setting up a reserve for self insurance to use the rate used by the insurance companies as this will give an allowance for expenses of administering the fund and for the reinsurance of the catastrophe hazard, to which features you have evidently paid no attention.

Any corporation which carries its own workmen's compensation insurance and does not provide for covering the catastrophe hazard, is flirting with death. Usually they reinsure the catastrophe hazard above $10,000 and in some instances reinsure themselves against excessive losses not resulting in catastrophes. For instance, a great many of the self insurers that I know have reinsured by means of a stop-loss contract all losses in excess of the estimated premiums to be paid out in any one year.

When you establish the pure premium by merely comparing the losses to the payroll and neglect to provide for reinsurance and expenses, you are likely to fool yourself.

The fundamental error which you have made is in the following statement:

"I would therefore recommend the establishment of a reserve on the basis of 6% of the annual payroll or ½ of 1% of the monthly payroll."

If you take ½ of 1% of each monthly payroll, at the end of 12 months, you will have established a reserve which consists of ½ of 1% of the annual payroll. If you desire to set up a reserve of 6% of the annual payroll, you must also set up 6% of the monthly payroll.

Do I make myself clear?

With best regards, believe me to be,

Yours very truly,

LEE J. WOLFE.

New York, N. Y.

You make yourself perfectly clear. But there is more to which attention should be directed. A second guess would indicate that $40,025 (total losses, 5 years) ÷ $6,615,000 (payroll, 5 years) is more nearly .605% than 6.05%.

As to points 1 and 2, if we take the last year's payroll and premium we get a rate of .602%, which is less (and hence less conservative) than .605%. Moreover, since the company's future losses will be based on compensation payments instead of premiums, it still appears that the actual experience loss is a better basis than premiums on which to estimate future losses. Premiums reflect average losses of many insurers; compensation payments reflect the losses of this particular insurer.