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Students' Department

H. P. Baumann

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H. P. Baumann, *Editor*

AMERICAN INSTITUTE EXAMINATIONS

[Note.—The fact that these answers 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 opinions of the editor of the *Students' Department.*]

Examination in Accounting Theory and Practice—Part I

November 14, 1935, 1:30 P. M. to 6:30 P. M.

Solve problem 1 or 2, problems 3, 4 and 5 and problem 6 or 7.

No. 1 (30 points):

A public service corporation about to issue $53,000,000 first mortgage bonds, to be dated July 1, 1935, and due July 1, 1965, sought bids from underwriters which narrowed down to two:

(1) "A" offers for itself and others for 3½% coupon bonds 101.913 per cent. of par, the company to receive $54,013,890.

(2) "B" offers for itself and others for 3.4 per cent. coupon bonds 100.417 per cent. of par, the company to receive $53,221,010.

The legal and accounting expense of the company applying to the issue is $300,000. Interest is payable semi-annually on January 1st and July 1st.

The company has outstanding an issue of non-callable, three-year 5% coupon notes dated April 15, 1933, due April 15, 1936, amounting to $16,000,000, interest on which is payable semi-annually. The current market price of these notes is 103 and interest.

After awarding the issue to A for offer (1), the president of the company issued the following announcement:

"The management has recommended and the directors have approved the sale of $53,000,000 par value, first mortgage 3½% bonds to "A" which bid 101.913 per cent. to the company. . . .

"The management and directors gave long and serious consideration to offer (2) of "B," carrying a 3.4 per cent. coupon. Although this would mean an interest saving of $53,000 a year over the 30-year life of the bonds the premium offered amounted only to $221,010 as compared with a premium of $1,013,890 in offer (1) of A. The receipt of nearly $800,000 in additional money at this time would be a great advantage to the company in further reducing the short-term debt still outstanding after the completion of this issue. The management is strongly of the opinion that this advantage more than offsets the interest saving under the lower coupon rate."

Assuming you had been asked to help the directors in awarding the bid, what reasoned opinion would you have given?

Note.—The calculations in this problem may be made either by arithmetic or by actuarial methods.

On the basis of 3½% interest per annum, payable semi-annually:

Present value of $1 payable after 60 half yearly periods	....	$ .35313
" " " $1 per annum over 60 " " "	....	$36.96399

Solution:

The effective rates of interest may be approximated by the use of the following formulae in which:

r = the effective rate per period of six months

I = the total interest payable over the entire life of the bond

P = the par value of the bond ($1,000)
S = the selling price of the bond (the amount received after expenses, by the issuing company)
Pr = the premium
D = the discount
n = the number of interest periods or payments

If the bonds are sold at a premium:

$$r=\frac{2(I-Pr)}{n\left(S+P+\frac{Pr}{n}\right)}$$

If the bonds are sold at a discount:

$$r=\frac{2\ (I+D)}{n\left(S+P-\frac{D}{n}\right)}$$

While both the offers provide for a premium to be paid to the issuing company, the legal and accounting expenses must be considered as a reduction of such premium in computing the interest cost. Hence, in the following schedule of factors in terms of a bond of $1,000 the $300,000 expense for services is deducted from the sales price and the premium in the case of "A". In the case of "B", whose offer provides for a premium of $221,010, the service charge converts the premium into a discount of ($300,000–$221,010) $78,990 for the purpose of our calculation.

	Amount	Per $1,000 bond
"A's" offer:		
Sales price ($54,013,890–$300,000)	$53,713,890.00	$1,013.47
Premium ($1,015,890–$300,000)	713,890.00	13.47
Interest payable during the entire life of the bonds (3½% of $1,000 for 30 years)		1,050.00
"B's" offer:		
Sales price ($53,221,010–$300,000)	52,921,010.00	998.51
Discount ($300,000–$221,010)	78,990.00	1.49
Interest payable during the entire life of the bonds (3.4% of $1,000 for 30 years)		1,020.00

Solving for "A":

$$\frac{2\ (\$1{,}050.00-\$13.47)}{60\left\{\$1{,}013.47+\$1{,}000.00+\frac{\$13.47}{60}\right\}}=\frac{\$\ 2{,}073.06}{\$120{,}821.40}\text{ or }1.716\%\text{ per period.}$$

Solving for "B":

$$\frac{2\ (\$1{,}020.00+\$1.49)}{60\left\{\$998.51+\$1{,}000.00-\frac{\$1.49}{60}\right\}}=\frac{\$\ 2{,}042.98}{\$119{,}909.40}\text{ or }1.704\%\text{ per period.}$$

Or a semi-annual interest saving of approximately 1.20%

On an issue of $53,000,000 of bonds, the semi-annual interest saving would amount to ($53,000,000×.012%) $6,360.

This semi-annual interest saving, expressed in terms of its present value at a rate of 3½ per cent. amounts to ($6,360×36.96399) $235,090.98. However, the use of a rate of 3½ per cent. is subject to question because of the many other factors involved. If any interest saving is to be discussed, it would be preferable to state the semi-annual saving of $6,360.

The next question to consider is the president's statement that the advantage of a reduction in the company's short term debt of approximately $800,000 more than offsets the interest saving under the lower coupon rate. If the current market price of the 5 per cent. notes outstanding reflects the current rate for short term money, we find that the rate is 1.2 per cent. per annum as shown below:

Interest at 5% from July 1, 1935, to April 15, 1936	$39.46
Premium	30.00
Net interest for 288 days	9.46
Annual rate (9.46×365/288)	1.2%

The assumption that approximately 762 of these $1,000 notes could be acquired immediately on the open market without causing an increase in the market price, is subject to question. Even though it were possible, paying .024 per cent. more for the long term bond interest would not be offset by the purchase of the $762,000 of short term notes paying 1.2 per cent. per annum.

Another point to consider is the possibility of reacquiring some or all of the issue of bonds before maturity, at a favorable price. In any given market bonds bearing a coupon of 3.4 per cent. could be acquired for a smaller premium than the same bonds bearing 3.5 per cent. coupons. Such savings, although impossible of accurate estimation, would nevertheless be real and undoubtedly considerable.

No. 2 (30 points):

The following statement gives the account balances on the books of a college at the end of the fiscal year before closing:

	Debit	Credit
General current funds		
Cash	$ 17,000	
Investments	20,000	
Accounts receivable	3,000	
Inventories	18,000	
Estimated income	1,385,000	
Appropriations		$1,360,000
Accounts payable		2,000
Reserve for working capital		20,000
Unappropriated surplus (after entering budget)		111,000
Educational and general expenditures	1,060,000	
Auxiliary enterprises expenditures	252,000	
Other non-educational expenditures	26,000	
Educational and general income		1,070,000
Auxiliary enterprises income		315,000
Other non-educational income		15,000
Transfer to endowment	50,000	
Transfer to plant funds	62,000	
	$2,893,000	$2,893,000

	Debit	Credit
Restricted current funds		
Cash	$ 3,000	
Investments	58,000	
Accounts payable		$ 1,000
Fund balances		60,000
	$ 61,000	$ 61,000
Loan funds		
Cash	$ 1,000	
Investments	5,000	
Notes receivable	36,000	
Income		$ 2,000
Funds principal beginning of year		25,000
Gifts to loan funds during year		15,000
	$ 42,000	$ 42,000
Endowment and other non-expendable funds		
Cash	$ 3,000	
Securities	857,000	
Funds in trust	100,000	
Profit on sales of investments		$ 10,000
Endowment funds principal beginning of year		700,000
Gifts to endowment		100,000
State tax collections for endowment		100,000
Transfer from current funds (temporary)		50,000
	$ 960,000	$ 960,000
Funds subject to annuities		
Cash	$ 1,000	
Investments	99,000	
Fund balances, beginning of year		$ 80,000
Gifts of annuity funds		20,000
	$ 100,000	$ 100,000
Unexpended plant funds		
Cash	$ 4,000	
Investments	15,000	
Expenditures for plant additions	360,000	
Replacement funds balances		$ 15,000
Plant additions funds balances, beginning of year		50,000
State appropriation for plant additions		200,000
Gifts for plant additions		50,000
Income on investments		2,000
Transfer from current funds		62,000
	$ 379,000	$ 379,000
Funds invested in plant		
Educational plant, beginning of year	$3,100,000	
Bonds payable		$ 100,000
Investment in plant		3,000,000
	$3,100,000	$3,100,000
Agency funds		
Cash	$ 2,000	
Investments	8,000	
Fund balances		$ 10,000
	$ 10,000	$ 10,000

Attention is called to the following facts and conditions which are disclosed upon examination of the records:

(1) Notes of loan fund amounting to $500 are found to be uncollectible and are to be written off.
(2) An annuity fund of $1,000 for current purposes has matured through the death of the annuitant.
(3) Included in the educational expenditures of the year from current funds is the sum of $14,000 for new equipment.
(4) Equipment included in plant assets at beginning of year to the amount of $32,000 had worn out or other disposition of it had been made.
(5) Orders and contracts outstanding at close of year and payable from current funds appropriations amounted to $6,000.
(6) An analysis of endowment funds shows that at the beginning of the year $200,000 included therein represent undesignated funds temporarily functioning as endowment.
(7) A further analysis indicates that $100,000 of endowment funds has been expended for a residence hall, the value of which is included in plant assets but not in endowment funds.
(8) Income and expenditures of restricted current funds are included in the budget estimates and in the totals of income and expenditure carried in the general-funds section.

You are required:

(a) To make the necessary closing entries in all funds.
(b) To prepare a balance-sheet after closing.
(c) To prepare a statement of current income, expenditures and surplus for the year.

Solution:

Adjusting entries

(1)		
Funds principal — loan funds	$ 500	
Notes receivable — loan funds		$ 500
To write off the notes of loan fund of $500 which are uncollectible.		
(2)		
Cash — general current funds	1,000	
Fund balances — funds subject to annuities	1,000	
Cash — funds subject to annuities		1,000
Unappropriated surplus — general current funds		1,000
To record the transfer of $1,000 in cash to the general current funds which cash is available because of the death of the annuitant.		
(3)		
Expenditures for plant additions — funds invested in plant	14,000	
Plant additions funds balances — funds invested in plant		14,000
To set up the new equipment purchased from current funds.		
(4)		
Investment in plant — funds invested in plant	32,000	
Educational plant — funds invested in plant		32,000

To write off the plant assets of $32,000 which had worn out or had been otherwise disposed of during the year		
(5)		
Appropriation expenditures — general current funds.	$ 6,000	
Orders and contracts payable — general current funds		$ 6,000
To record the liability on orders and contracts outstanding at the end of the year		
(6)		
Endowment funds principal — endowment funds	200,000	
Undesignated funds — endowment funds		200,000
To indicate the undesignated funds included in the endowment funds principal balance at the beginning of the year		
(7)		
Undesignated funds — endowment funds	100,000	
Endowment funds principal — endowment funds		100,000
To credit the principal account with the amount expended for the residence hall. It is assumed that while the balance of the undesignated funds at the beginning of the year amounted to $200,000 that the amount expended for the residence hall was taken from the undesignated funds.		
Closing entries		
(8)		
Educational and general income	1,070,000	
Auxiliary enterprises income	315,000	
Other non-educational income	15,000	
Estimated income		1,385,000
Unappropriated surplus		15,000
To close the revenue accounts and to transfer the excess of actual over estimated revenues to the unappropriated surplus account.		
(9)		
Appropriations	1,360,000	
Unappropriated surplus		
Educational and general expenditures		1,060,000
Auxiliary enterprises expenditures		252,000
Other non-educational expenditures		26,000
Appropriation expenditures		6,000
Unappropriated surplus		16,000
To close the appropriation and expenditure accounts to unappropriated surplus.		

(10)

Unappropriated surplus	$ 62,000	
Transfer to plant funds		$ 62,000
To write-off the transfer to plant funds		

(11)

Loan funds:

Income	2,000	
Gifts to loan funds during the year	15,000	
Funds principal		17,000
To close the income and gifts account to funds principal account		

Endowment and other non-expendable funds:

(12)

Profit on sales of investments	10,000	
Gifts to endowments	100,000	
State tax collections for endowment	100,000	
Endowment funds principal		210,000
To close the income, gifts and tax collection accounts to the funds principal account		

Funds subject to annuities:

(13)

Gifts to annuity funds	20,000	
Fund balances		20,000
To close the gifts account to the fund balances account		

Unexpended plant funds:

(14)

State appropriations for plant additions	200,000	
Gifts for plant additions	50,000	
Income on investments	2,000	
Transfer from current funds	62,000	
Plant additions funds balances	46,000	
Expenditures for plant additions		360,000
To close the state appropriations, gifts, income, expenditure and transfer accounts to the funds balances account		

Funds invested in plant:

(15)

Educational plant	360,000	
Investment in plant		360,000
To record the additions to the plant during the year		

A College

Statement of surplus (fund balances) accounts for the year ended—blank date

	General current					Unexpended plant funds		
	Unrestricted	Restricted	Loan	Endowment	Annuities		Plant	Agency
Balance beginning of year	$86,000	$60,000	$25,000	$700,000	$80,000	$ 50,000	$3,000,000	$10,000 (1)
Add:								
Income	56,000		2,000			2,000		
Gifts			15,000	100,000	20,000	50,000		
State tax collections				100,000				
Profit on sale of investments				10,000				
State appropriation						200,000		
Transfer from general fund	62,000*					62,000		
Additions to plant							374,000	
Total	$80,000	$60,000	$42,000	$910,000	$100,000	$364,000	$3,374,000	$10,000
Deduct:								
Uncollectible note receivable			500					
Transfer to undesignated funds				100,000				
Transfer to general current fund	1,000*				1,000			
Transfer to plant investment						360,000		
Assets retired							32,000	
Balance end of year	$81,000	$60,000	$41,500	$810,000	$ 99,000	$ 4,000	$3,342,000	$10,000

(1) NOTE.—The balance in the unappropriated surplus account as shown by the trial balance of	$111,000
should be reduced by the excess of estimated income of $1,385,000 over the estimated expenditures ($1,360,000) of	25,000
To obtain the balance in the account at the beginning of the year of	$ 86,000

A College

Balance-sheet—blank date

Assets

General current funds:	
Unrestricted:	
Cash	$ 18,000
Investments	20,000
Accounts receivable	3,000
Inventories	18,000
Due from endowment	50,000
Total	$ 109,000
Restricted:	
Cash	$ 3,000
Investments	58,000
Total	$ 61,000
Loan funds:	
Cash	$ 1,000
Investments	5,000
Notes receivable	35,500
Total	$ 41,500
Endowment and other non-expendable funds:	
Cash	$ 3,000
Securities	857,000
Funds in trust	100,000
Total	$ 960,000
Funds subject to annuities:	
Investments	$ 99,000
Unexpended plant funds:	
Cash	$ 4,000
Investments	15,000
Total	$ 19,000
Funds invested in plant:	
Educational plant	$ 3,442,000
Agency funds:	
Cash	$ 2,000
Investments	8,000
Total	$ 10,000

Liabilities, reserves and surplus

General current funds:		
Unrestricted:		
Accounts payable	$2,000	
Orders and contracts payable	6,000	
Total liabilities		$ 8,000
Reserve for working capital		20,000
Surplus		81,000
Total		$ 109,000
Restricted:		
Accounts payable		$ 1,000
Fund balances		60,000
Total		$ 61,000
Loan funds:		
Fund balances		$ 41,500
Endowment and other non-expendable funds:		
Due to current funds (temporary)		$ 50,000
Undesignated funds temporarily functioning as endowment		100,000
Endowment funds principal		810,000
Total		$ 960,000
Funds subject to annuities:		
Fund balances		$ 99,000
Unexpended plant funds:		
Replacement funds balances		$ 15,000
Fund balances		4,000
Total		$ 19,000
Funds invested in plant:		
Bonds payable		$ 100,000
Investment in plant		3,342,000
Total		$3,442,000
Agency funds:		
Fund balances		$ 10,000

A College

Balance-sheet—blank date

Assets	General current funds — Unrestricted	General current funds — Restricted	Loan funds	Endowment and other non-expendable funds	Funds subject to annuities	Unexpended plant funds	Funds invested in plant	Agency funds	Total
Cash	$ 18,000	$ 3,000	$ 1,000	$ 3,000		$ 4,000		$ 2,000	$ 31,000
Investments	20,000	58,000	5,000	857,000	$99,000	15,000		8,000	1,062,000
Accounts receivable	3,000								3,000
Inventories	18,000								18,000
Due from endowment	50,000			*50,000*					
Notes receivable			35,500						35,500
Funds in trust				100,000					100,000
Educational plant							$3,442,000		3,442,000
Totals	$109,000	$61,000	$41,500	$910,000	$99,000	$19,000	$3,442,000	$10,000	$4,691,500
Liabilities, reserves and surplus									
Accounts payable	$ 2,000	$ 1,000							$ 3,000
Orders and contracts payable	6,000								6,000
Reserve for working capital	20,000								20,000
Bonds payable							$100,000		100,000
Undesignated funds balance				$100,000					100,000
Replacement funds balances						$15,000			15,000
Fund balances (surplus)	81,000	60,000	$41,500	810,000	$99,000	4,000	3,342,000	$10,000	4,447,500
Totals	$109,000	$61,000	$41,500	$910,000	$99,000	$19,000	$3,442,000	$10,000	$4,691,500

A College

Statement of current income, and expenditures
for the year ended — blank date

	General current funds	
Income:		
Educational and general	$1,070,000	
Auxiliary enterprises	315,000	
Other non-educational	15,000	
Total income		$1,400,000
Expenditures:		
Educational and general	$1,060,000	
Auxiliary	252,000	
Other non-educational	26,000	
Appropriation expenditures—orders and contracts	6,000	
Total expenditures		$1,344,000
Excess of income over expenditures		$ 56,000

Examination in Accounting Theory and Practice — Part II

May 17, 1935, 1:30 P. M. to 6:30 P. M.

Editor, Students' Department:

Dear Sir:

In the solution of problem 1, part II, of the Institute examination in accounting theory and practice of May 17, 1935, published in the September issue of The Journal of Accountancy, the assumptions were made (1) that the repair and maintenance charges on the three additional vessels would be similar in amount (according to age) as the vessels already owned and (2) that the three vessels each have a useful life of 20 years.

These assumptions are far-fetched and unwarranted from the facts stated in the problem, but as the latter itself is unworkable without making such assumptions in order to arrive at a reasonable solution, this criticism is directed rather to the problem than to the published solution. The problem is faulty in that it omits details necessary for the determination of the annual costs of repairs and maintenance and of the annual depreciation on the three additional vessels. The repair and maintenance costs of the eight vessels already owned are known, their useful lives are known — these are given in the problem. As to the three additional vessels — the costs of repairs and maintenance are unknown — and as to their useful lives, one guess is as good as another. They may each have a useful life of 20 years; one, two, or all of the three of them may become absolutely unseaworthy within a shorter time. The problem leaves one groping on that point.

The three additional vessels are each similar to the other; the problem states that in language clear enough. However, no inference from the wording of the problem leads to the assumption that a "new" vessel and an "old" vessel of the same age each require the same extent of repairs or that they would simultaneously be placed on junk sale. If the writer of the problem had intended the phrase "three similar vessels" to mean that a "new" vessel requires the same maintenance outlay and would be serviceable just as long as one already owned of the same age and had expected his American candidates to place no other meaning, then God help us, we have been taught different English on this side of the Pacific!

Very truly yours,

(Signed) D. R. Justo.

Manila, Philippine Islands.

Reply:

Your comment on problem 1, part II, set by the board of examiners in the May, 1935, examination is very interesting. While the assumptions made in the solution may be far-fetched, they are the only ones that may be made on the facts given in the problem, particularly when the candidate is told that the three vessels to be purchased are "similar". A small straw to snatch at, but at least, a straw.

Premium on Preferred Stock of Subsidiaries

Editor, Students' Department:

Dear Sir:

Will one of your staff be so kind as to give us an expression of opinion on an accounting problem, for which after a diligent search, we have been unable to find a solution in any text book.

The question has arisen in making up our consolidated balance-sheet, whether a premium on a preferred stock of a subsidiary company should be included in the surplus at date of acquisition of a subsidiary company in arriving at a consolidated goodwill. This preferred stock sold by the subsidiary was marketed a number of years after incorporation and a considerable number of years prior to acquisition.

We are attaching a balance-sheet setting forth our problem and we would certainly appreciate an opinion at your earliest convenience.

Yours very truly,

(Signed) Richard P. Peale.

Hartford, Connecticut.

Company A purchases a 100 per cent. interest in Company B.
Company B's balance-sheet at date of acquisition.
What is the consolidated goodwill?

Company A

Assets		*Liabilities*	
Fix capital	$500,000	Current liabilities	$ 75,000
Investment in Co. B	300,000	Long term debt	400,000
Current assets	100,000	Common stock	300,000
		Surplus	125,000
	$900,000		$900,000

Company B

Assets		*Liabilities*	
Fixed capital	$200,000	Current liabilities	$ 25,000
Current assets	25,000	Common stock	100,000
		Preferred stock	50,000
		Premium on preferred stock	5,000
		Surplus	45,000
	$225,000		$225,000

100% ownership.

Reply:

In general, the total net worth, at date of acquisition, applicable to the stock purchased represents the underlying assets in which the purchasing company has an interest. This net worth should include the capital stock, surplus, (earned, paid-in, etc.), and surplus appropriations accounts.

Your question indicates that the holding company has a 100 per cent. interest in Company B. Does this include the ownership of the preferred stock which was "sold by the subsidiary . . . a number of years after incorporation and a considerable number of years prior to acquisition"? If it does, the answer to your problem is:

Net worth at acquisition:	
Capital stock:	
Preferred	$ 50,000
Common	100,000
Premium on preferred stock	5,000
Surplus	45,000
Total	$200,000
Purchase price of the investment in Company B	300,000
Amount paid for goodwill	$100,000

If, however, the purchase price of $300,000 did not include the preferred stock (which may be assumed to have no preference in the surplus or premium on the preferred stock) the answer is:

Net worth at acquisition:	
Capital stock—common	$100,000
Premium on preferred stock	5,000
Surplus	45,000
Total	$150,000
Purchase price of the common stock	300,000
Amount paid for goodwill	$150,000