

2-1929

## Student's Department

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# Students' Department

H. P. BAUMANN, *Editor*

## 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 opinion of the editor of the *Students' Department*.)

### EXAMINATION IN ACCOUNTING THEORY AND PRACTICE—PART I (*continued*)

November 15, 1928, 1 P. M. to 6 P. M.

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

No. 5 (27 points):

On a certain date, Mr. Mann borrowed \$15,000. As he expects to inherit \$5,000 three years from this date, he wishes to reduce the loan by \$10,000 in the three years by making equal monthly payments, including interest at the rate of one half of one per cent. per month.

What would be the amount of the monthly payment?

$$\begin{array}{r} \text{Given } v^{36} \qquad .8356449 \\ (1+i)^{36} \qquad 1.1966805 \end{array}$$

*Solution:*

That portion of the loan (\$10,000) which Mr. Mann wishes to pay in three years in equal monthly instalments represents the present value of an annuity. The equal monthly instalments are the rents produced. Therefore:

$$1 - .8356449 = .1643551 \text{ compound discount}$$

$$.1643551 \div .005 = 32.87102 \text{ present value of annuity of 1}$$

$$\$10,000.00 \div 32.87102 = \$304.22 \text{ equal monthly instalments to reduce the loan by } \$10,000$$

In addition, the amount of simple interest on the remainder, \$5,000 at .005 per month, or \$25, must be included as a part of the monthly payment. The total is, therefore, \$304.22 + \$25.00 or \$329.22.

This amount may be proved by setting up a table of reduction as follows:

Table of reduction				
Month	Payment	Interest	Principal	Balance
				\$15,000.00
1.....	\$329.22	\$75.00	\$254.22	14,745.78
2.....	329.22	73.73	255.49	14,490.29
3.....	329.22	72.45	256.77	14,233.52
4.....	329.22	71.17	258.05	13,975.47
5.....	329.22	69.88	259.34	13,716.13
6.....	329.22	68.58	260.64	13,455.49
7.....	329.22	67.28	261.94	13,193.55
8.....	329.22	65.97	263.25	12,930.30
9.....	329.22	64.65	264.57	12,665.73
10.....	329.22	63.33	265.89	12,399.84
11.....	329.22	62.00	267.22	12,132.62
12.....	329.22	60.66	268.56	11,864.06
13.....	329.22	59.32	269.90	11,594.16
14.....	329.22	57.97	271.25	11,322.91
15.....	329.22	56.61	272.61	11,050.31
16.....	329.22	55.25	273.97	10,776.34
17.....	329.22	53.88	275.34	10,501.00

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Month	Payment	Interest	Principal	Balance
18.....	\$329.22	\$52.51	\$276.71	\$10,224.29
19.....	329.22	51.12	278.10	9,946.14
20.....	329.22	49.73	279.49	9,666.65
21.....	329.22	48.33	280.89	9,385.76
22.....	329.22	46.93	282.29	9,103.47
23.....	329.22	45.52	283.70	8,819.77
24.....	329.22	44.10	285.12	8,534.65
25.....	329.22	42.67	286.55	8,248.10
26.....	329.22	41.24	287.98	7,960.12
27.....	329.22	39.80	289.42	7,670.70
28.....	329.22	38.35	290.87	7,379.83
29.....	329.22	36.90	292.32	7,087.51
30.....	329.22	35.44	293.78	6,793.73
31.....	329.22	33.97	295.25	6,498.48
32.....	329.22	32.49	296.73	6,201.75
33.....	329.22	31.01	298.21	5,903.54
34.....	329.22	29.52	299.70	5,603.84
35.....	329.22	28.02	301.20	5,302.64
36.....	329.22	26.54	302.68*	5,000.00
Paid from inheritance..	5,000.00	.....	5,000.00	.....
Total.....	<u>\$16,851.92</u>	<u>\$1,851.92</u>	<u>\$15,000.00</u>	

\* Adjusted for 4-cent difference due to carrying out decimals to only two places.

EXAMINATION IN ACCOUNTING THEORY AND PRACTICE—PART II

NOVEMBER 16, 1928, 1 P. M. TO 6 P. M.

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

No. 1 (25 points):

A company, engaged in the manufacture of piece goods, had no cost system. Its sales were made on the basis of estimated costs, adding 15 per cent. to estimated direct cost to cover overhead, then adding to the total so estimated a profit equal to 12 per cent. of the selling price.

At the end of the year 1927, the trial balance was as follows:

Buildings.....	\$276,000	
Machinery.....	310,000	
Spools and other similar items.....	33,000	
Accounts receivable.....	110,000	
Accounts payable.....		\$27,000
Reserves for depreciation to		
Jan. 1, 1927—Buildings.....		36,000
Machinery.....		71,000
Sales.....		2,013,000
Inventory—January 1, 1927.....	157,000	
Purchases—raw material.....	1,200,000	
Labor—direct.....	480,000	
“ foremen, etc.....	213,000	
Office payroll.....	76,000	
Factory expense.....	280,000	
Office and administration expenses.....	113,000	
Capital stock.....		1,000,000
Cash in bank.....	18,000	
Surplus—January 1, 1927.....		119,000
	<u>\$3,266,000</u>	<u>\$3,266,000</u>

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An estimated cost, which may be taken as representative of all the estimated costs, was as follows:

Cost per yard:	
Raw material . . . . .	\$ .89
Weaving—piece-work . . . . .	.38
Winding, warping, etc. . . . .	.03
Foremen and supervision . . . . .	.10
	\$1.40
Factory and office overhead—15% of \$1.40 . . . . .	.21
	\$1.61
Profit—12% of \$1.83 . . . . .	.22
	\$1.83

Inventories were principally of raw material and for the present purpose may be considered as consisting entirely of raw material at cost. The inventory at December 31, 1927, was valued at \$376,000.

The rate of depreciation on buildings was 2 per cent. and on machinery, 7½ per cent.; spools, etc., were not depreciated; replacements were charged to operations (factory expense).

Before the books were closed, it was realized that a heavy loss had been sustained. Suggestions were made—a defalcation, material stolen, etc.

What was the amount of the loss and to what do you ascribe it? Indicate briefly what is needed to prevent a repetition of such conditions.

*Solution:*

If the trial balance and the amount of the closing inventory are correct the loss for the year 1927 was \$158,770 as shown in the following exhibits:

*Exhibit 1*

A COMPANY

Statement of cost of goods manufactured and sold  
for the year ended December 31, 1927

Materials used:	
Inventory, January 1, 1927 . . . . .	\$157,000
Purchases . . . . .	1,200,000
	\$1,357,000
Inventory, December 31, 1927 . . . . .	376,000
Materials used . . . . .	\$981,000
Direct labor . . . . .	480,000
Foremen and supervision . . . . .	213,000
	\$1,674,000
Factory overhead:	
Factory expense . . . . .	\$280,000
Depreciation—buildings (2% of \$276,000) . . . . .	5,520
Depreciation—machinery (7½% of \$310,000) . . . . .	23,250
	308,770
Total factory overhead . . . . .	308,770
Cost of goods manufactured and sold . . . . .	\$1,982,770

*Students' Department*

*Exhibit 2*

A COMPANY

Statement of profit and loss  
for the year ended December 31, 1927

Sales .....		\$2,013,000
Cost of sales (exhibit 1).....		1,982,770
		\$30,230
Gross profit .....		\$30,230
<i>Less: Expenses:</i>		
Office payroll.....	\$76,000	
Office and administrative expenses.....	113,000	
		189,000
Total expenses .....		189,000
Loss for year .....		\$158,770

The following comparison of estimated and actual unit costs is based on a production of 1,100,000 yards. The amount of the yardage was determined by dividing the amount of the sales, \$2,013,000 by the selling price per yard, \$1.83, which is the amount given as the representative selling price.

	Estimated	Actual	Excess of actual over estimated
Cost per yard:			
Raw material .....	\$.89	\$.8918	\$.0018
Direct labor—			
Weaving—piece work.....	\$.38		
Winding, warping, etc.....	.03		
Total direct labor .....	.41	.4364	.0264
Foremen and supervision .....	.10	.1936	.0936
Total .....	\$1.40	\$1.5218	\$.1218
Factory and office overhead.....	.21	.4525	.2425
Total .....	\$1.61	\$1.9743	\$.3643
Profit—per estimate.....	.22		
Loss sustained.....		.1443	.3643
Selling price per yard.....	\$1.83	\$1.83	

(An inquiry into the method followed and an investigation of the details making up the estimate should be made.)

A further analysis of the raw-material account shows that, based on a cost of \$.89 per yard, 2,247 yards are unaccounted for.

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	Amount	Yards
Inventory, January 1, 1927.....	\$157,000	176,404
Purchases.....	1,200,000	1,348,315
 Total.....	 \$1,357,000	 1,524,719
Inventory, December 31, 1927.....	376,000	422,472
 Raw material used.....	 \$981,000	 1,102,247
Yards sold.....		1,100,000
 Unaccounted for.....		2,247

The amount unaccounted for approximates 2 per cent. of the production for the year, and may reasonably be assumed to be due to waste or shrinkage in process.

While the actual amount of piece-work labor (weaving) is not given and, hence, can not be checked against the estimate, it may be assumed that the rate used in the estimate (\$.38) is correct. The week-work labor estimate was, therefore, understated \$.0264 per yard.

The estimates for foremen and supervision, and factory and office overhead were understated \$.0936 and \$.2425 per yard, respectively, a total of \$.3361 per yard or \$369,710 on sales of 1,100,000 yards. The estimate does not show any provision for depreciation.

In this solution it is assumed that the amounts and data given are correct. In practice, the accountant should insist that the accounts be verified. While it would appear from the analysis that the loss was due to the practice of basing selling prices on estimates which later proved to be inaccurate, it is possible that a portion of the loss is the result (1) of treating extraneous charges as current expenses, (2) of writing off replacements of other capital charges to operations, (3) of padded payrolls, (4) of excessive salaries, or (5) of inaccuracies in inventories.

A survey of the plant and operations may disclose possible reductions in the overhead cost and a possible saving in the handling of inventories. The inventory at December 31, 1927, of \$376,000 is more than 38 per cent. of the total material used during the year, approximately enough to meet the requirements of the next four months.

A cost system, simple to operate and yet comprehensive in scope, could be devised and should be recommended as a means of preventing a repetition of such conditions in the future.

If the management, however, will not consent to the installation of such a system and requests the accountant to submit a revised estimate, the following may be presented:

Cost per yard:		
Raw material.....		\$. 8918
Direct labor—		
Weaving—piece work.....	\$.3800	
Winding, warping, etc.....	.0564	
		.4364

*Students' Department*

Foremen and supervision .....	\$. 1936
Total .....	<u>\$1.5218</u>
Factory and office overhead (30% of \$1.5218) .....	.4565
Total .....	<u>\$1.9783</u>
Profit (12% of \$2.25) .....	.2700
Selling price .....	<u><u>\$2.25</u></u>

The management should be cautioned to check the estimate monthly and to revise it immediately if conditions change. It is not known what effect a price of \$2.25 will have upon the sales volume.

No. 3 (27 points):

Commencing an audit, during February, 1928, of the books of account of the A B C Manufacturing Co. for the year 1927, the balance-sheets following, prepared by the bookkeeper, were presented to you:

A B C MANUFACTURING COMPANY  
BALANCE-SHEETS

<i>Assets</i>	December 31,	
	1927	1926
Land .....	\$40,000	\$40,000
Buildings .....	225,000	175,000
Machinery and equipment .....	112,000	100,000
Tools .....	13,500	12,000
Patents .....	48,000	50,000
Unamortized bond discount .....	4,750	
Prepaid operating services and supplies on hand .....	6,250	7,500
Marketable securities .....		25,000
Cash .....	52,000	35,000
Accounts receivable .....	160,000	150,000
Raw materials .....	70,000	60,000
Goods in process of manufacture .....	30,000	35,000
Finished goods .....	100,000	110,000
Totals .....	<u>\$861,500</u>	<u>\$799,500</u>
<i>Liabilities</i>		
Bank loans .....	\$10,000	\$40,000
Notes payable .....	5,000	10,000
Accounts payable .....	62,000	70,000
Bonds .....	100,000	
Reserves:		
For depreciation of building .....	21,500	17,500
"                    "          " machinery .....	48,800	44,500
"    bad accounts .....	4,200	3,000
Capital stock .....	500,000	500,000
Surplus .....	110,000	114,500
Totals .....	<u>\$861,50</u>	<u>\$799,500</u>

In the course of the audit, it was ascertained that

(a) Additions to buildings, actually costing \$35,000, were set up on the books at \$50,000, based upon unaccepted bids by outside contractors.

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(b) Machinery, costing \$10,000, was sold for \$3,000. The accrued depreciation on these machines amounted to \$5,800 and the loss was charged against surplus.

(c) The bonds were issued on July 1, 1927, at 95. They mature in ten years and interest at six per cent. is payable semi-annually.

(d) Tools, costing \$4,000, were acquired during the year and the account was adjusted to a fair value, December 31, 1927.

(e) The marketable securities were sold during the year for \$32,000.

(f) Four quarterly dividends of one and one half per cent. were paid during the year.

(g) Depreciation of buildings at two per cent. was computed on \$175,000 for six months and on \$225,000 for the other six months.

Relative to the foregoing, prepare surplus account showing result for the year after making any adjustments you think necessary; also prepare statement showing the changes in the accounts resulting from adjustments of surplus and reserves and show the working capital at December 31, 1927.

*Solution:*

The following is an explanation of the adjustments made in the working papers on pages 152 and 153.

Explanation of adjustments

- (a) Reverses the entry for the write up of additions to buildings to \$50,000 (based upon the unaccepted bids by outside contractors). This entry eliminates the write up from the buildings account.
- (b) Transfers the entry for the profit of \$7,000 realized from the sale of the marketable securities from the surplus account so that the amount received for the securities may be carried out as a separate item, as a fund provided.
- (c) Transfers to a separate line the charge to surplus account for the four quarterly dividends of one and one half per cent. paid during the year so that these dividends may be carried out as a separate item, as a fund applied.
- (d) Transfers the loss on sale of machinery to machinery account so that funds provided for the purchase of additional machinery may be determined.
- (e) Transfers to a separate line the net profits for the year from surplus account so that the net profits may be carried out as a separate item, as a fund provided.
- (f) A memorandum entry proving that all the items causing the net decrease in surplus (\$4,500) have been separately accounted for.
- (g) Transfers the following depreciation from the reserves to funds provided by profits:
- (h) profits:
  - (g) on buildings..... \$4,000.00
  - (h) on machinery and equipment..... 10,100.00
- (i) Transfers to funds provided by profits the amount of tools written off to adjust the tools account to a fair valuation.
- (j) Transfers the bond discount amortized to funds provided by profits.
- (k) Transfers the amount of patents written off to funds provided by profits.
- (l) Adjustment to set up the amount of bond interest accrued at December 31, 1927.
- (m) Records the funds provided by sale of machinery.
- (n) Reverses the amount of accrued depreciation on machinery sold—depreciation which was charged to the reserve account.



*Students' Department*

- (o) Transfers the amount of discount on bonds to bonds account to set out the funds provided by the sale of bonds.
- (p) Transfers the increase in reserve for bad accounts to accounts receivable to set out the net increase in the latter.

A B C MANUFACTURING COMPANY

Statement of application of funds for the year ended December 31, 1927

Funds provided:		
By net profit—		
Net profit per books . . . . .	\$4,700	
Less: Interest accrued on bonds . . . . .	3,000	
Adjusted net profit . . . . .		\$1,700
Add: Depreciation—		
Buildings . . . . .	\$4,000	
Machinery and equipment . . . . .	10,100	
Tools . . . . .	2,500	
		16,600
Amortization of patents . . . . .	2,000	
Bond discount amortized . . . . .	250	
		\$20,550
By sale of machinery:		
Cost . . . . .	\$10,000	
Less: Accrued depreciation . . . . .	5,800	
		\$4,200
Less: Loss on sale . . . . .	1,200	
		3,000
By sale of marketable securities:		
Cost . . . . .	\$25,000	
Add: Profit on sale . . . . .	7,000	
		32,000
By issue of bonds:		
Par . . . . .	\$100,000	
Less: Discount . . . . .	5,000	
		95,000
Total funds provided . . . . .		\$150,550
Which were applied as follows:		
To purchase of fixed assets—		
Buildings . . . . .	\$35,000	
Machinery and equipment . . . . .	22,000	
Tools . . . . .	4,000	
		\$61,000
To payment of dividends . . . . .		30,000
To increase in working capital and prepaid expenses . . . . .		59,550
		\$150,550
Total funds applied . . . . .		\$150,550

A B C MANUFACTURING COMPANY  
Application of funds—working papers

	Years ended		Year's excess	Adjustments	Working capital	Funds		
	December 31, 1927	1926					Debit	Credit
<i>Assets</i>								
Land	\$40,000	\$40,000	\$50,000	(d) \$1,200	(a) \$15,000	\$35,000		
Buildings	225,000	175,000	12,000	(n) 5,800				
Machinery and equipment	112,000	100,000		(m) 3,000				
Tools	13,500	12,000	1,500	(i) 2,500			22,000	
Patents	48,000	50,000		(k) 2,000				4,000
Unamortized bond discount	4,750		4,750	(j) 250	(c) 5,000			
Prepaid operating services and supplies on hand	6,250	7,500					\$1,250	
Marketable securities		25,000	17,000		(b) 7,000			\$32,000
Cash	52,000	35,000	10,000		(p) 1,200			
Accounts receivable	160,000	150,000	10,000					
Raw materials	70,000	60,000	10,000					
Goods in process of manufacture	30,000	35,000	5,000				5,000	
Finished goods	100,000	110,000	10,000				10,000	
	<u>\$861,500</u>	<u>\$799,500</u>						
<i>Liabilities</i>								
Bank loans	\$10,000	\$40,000	30,000				30,000	
Notes payable	5,000	10,000	5,000				5,000	
Accounts payable	62,000	70,000	8,000				8,000	
Bonds	100,000							
Accrued interest on bonds			100,000	(o) 5,000	(l) 3,000			95,000
<i>Reserves:</i>								
For depreciation of building	21,500	17,500	4,000	(g) 4,000				
For depreciation of machinery	48,800	44,500	4,300	(h) 10,100	(n) 5,800			
For bad accounts	4,200	3,000	1,200	(p) 1,200				
Capital stock	500,000	500,000			(f) 4,500			
Surplus	110,000	114,500	4,500					
	<u>\$861,500</u>	<u>\$799,500</u>	<u>\$152,750</u>					

*Students' Department*

	Debits	Credits		
<b>Analysis of surplus changes:</b>				
(Reversing all debits and credits)				
Appraisal increase in value of buildings		\$15,000	(a) \$15,000	
Profit on sale of marketable securities.		7,000	(b) 7,000	
Dividends paid	\$30,000			(c) \$30,000
Loss on sale of machinery	1,200			(d) 1,200
Net profit for the year		4,700	(e) 4,700	
Net decrease		4,500	(f) 4,500	
	<u>\$31,200</u>	<u>\$31,200</u>		
Cash dividends paid			(c) 30,000	\$30,000
Net profit for year				
Depreciation written off—				
Buildings			(e) 4,700	
Machinery and equipment			(g) 4,000	
Tools			(h) 10,100	\$20,550
Bond discount amortized			(i) 2,500	
Amortization of patents			(j) 250	
Bond interest accrued			(k) 2,000	
Funds provided by sale of machinery			(l) 3,000	3,000
			<u>\$99,250</u>	
Increase in working capital			59,550	59,550
			<u>\$78,800</u>	<u>\$150,550</u>
				<u>\$150,550</u>

*The Journal of Accountancy*

A B C MANUFACTURING COMPANY

Schedule of working capital and prepaid expenses December 31, 1927, and  
December 31, 1926

	December 31, 1927	1926	Working capital Increase	Decrease
<b>Current assets:</b>				
Cash . . . . .	\$52,000	\$35,000	\$17,000	
Accounts receivable (net) . . . . .	155,800	147,000	8,800	
Raw materials . . . . .	70,000	60,000	10,000	
Goods in process . . . . .	30,000	35,000		\$5,000
Finished goods . . . . .	100,000	110,000		10,000
<b>Total current assets . . . . .</b>	<b>\$407,800</b>	<b>\$387,000</b>		
<b>Current liabilities:</b>				
Bank loans . . . . .	\$10,000	\$40,000	30,000	
Notes payable . . . . .	5,000	10,000	5,000	
Accounts payable . . . . .	62,000	70,000	8,000	
Accrued interest on bonds . . . . .	3,000			3,000
<b>Total current liabilities . . . . .</b>	<b>\$80,000</b>	<b>\$120,000</b>		
<b>Working capital . . . . .</b>	<b>\$327,800</b>	<b>\$267,000</b>		
<b>Increase in working capital . . . . .</b>				<b>60,800</b>
			<u>\$78,800</u>	<u>\$78,800</u>
<b>Increase in working capital . . . . .</b>			<b>\$60,800</b>	
<b>Decrease in prepaid operating services and supplies on hand . . . . .</b>			<b>1,250</b>	
<b>Net increase . . . . .</b>			<u><b>\$59,550</b></u>	

*Schedule 1*

A B C MANUFACTURING COMPANY

Analysis of surplus account for the year ended December 31, 1927

Balance, January 1, 1927 . . . . .		\$114,500
<i>Add:</i>		
Profit on sale of marketable securities . . . . .		7,000
Profit per books . . . . .	\$4,700	
<i>Less:</i> Interest accrued on bonds at December 31, 1927 (3% on \$100,000) . . . . .	3,000	
Adjusted profit (schedule 2) . . . . .		1,700
Depreciation on appreciation of buildings (1% on \$15,000) . . . . .		150
<b>Total . . . . .</b>		<u><b>\$123,350</b></u>

*Students' Department*

<i>Deduct:</i>		
Loss on sale of machinery . . . . .	\$1,200	
Dividends paid . . . . .	30,000	
	\$31,200	
Adjusted balance, December 31, 1927 . . . . .		\$92,150

*Schedule 2*

A B C MANUFACTURING COMPANY

Statement showing computation of adjusted profits for the year ended  
December 31, 1927

Funds provided by profits (per working papers) . . . . .	\$20,550
<i>Deduct:</i> Charges to profit and loss:	
Bond discount amortized . . . . .	\$250
Provision for depreciation:	
Buildings . . . . .	\$4,000
Machinery and equipment . . . . .	10,100
Tools . . . . .	2,500
	16,600
Amortization of patents . . . . .	2,000
	18,850
Adjusted profit for the year ended December 31, 1927 . . .	\$1,700

NOTE.—The depreciation on the amount of the write up of the buildings may be adjusted against operating profits or surplus account.

*Schedule 3*

A B C MANUFACTURING COMPANY

Reserve for unrealized profit on appraisal

Appraisal increase in value of buildings . . . . . (Transferred from surplus account)	\$15,000
<i>Less:</i> Depreciation on the appreciation (1% on \$15,000) . . . . .	150
Balance, December 31, 1927 . . . . .	\$14,850