2.96 - Management in Engineering, Fall 2004 Massachusetts Institute of Technology

Department of Mechanical Engineering

Instructors: Professor Jung-Hoon Chun and Professor Alexander d'Arbeloff

Massachusetts Institute of Technology 2.96 Management for Engineers Professor Jung-Hoon Chun Exam Nov. 3, 2004 TA

Quiz 1

- **DO NOT OPEN** this quiz until instructed to do so.
- This quiz is **closed book.**
- Put your name on top of **every** page these papers may be separated for grading.
- Write your solutions in the space provided. Should you need extra space, write on the back of the sheet containing the question.
- Be neat and write legibly.

Problem Q1-1. Know your neighbors [1 pt]

Fill in your name and the names of the people sitting next to you. If you are at the end of a row, write 'X' in the space provided.

Your name:	
Name of person to your right:	
Name of person to your left:	

DO NOT WRITE ON THIS PAGE

Problem	Grade	Points
Q1-1		1
Q1-2		20
Q1-3		20
Q1-4		10
Q1-5		9
Total		60

3

Problem Q1-2. Financial Interpolation [20 pts] Complete the missing values from (a) to (i) in the chart below. Show your calculations. Note that the first year of operations is 2001.

CONSOLIDATED BALANCE SHEET

	2003	2002	2001
Assets:			
Cash	\$400	\$ 500	\$ 300
Accounts receivable	(g)	400	500
Inventory	300	(d)	400
Land	400	300	(a)
Property, plant, and equipment (net)	800	600	500
Liabilities and Stockholders' Equity:			
Accounts payable	400	700	300
Bonds payable	800	500	400
Contributed capital	900	400	600
Retained earnings	300	(e)	500
Sales	(h)	1,300	<i>(b)</i>
Expenses	(700)	<i>(f)</i>	(300)
Net Income	(100)	500	600
Dividends	(i)	600	(c)

(a) (Write an equation, solve it)

(b)

(c)

Quiz 1 Name: _____

4

(d)

(e)

(f)

(g)

(h)

(i)

Quiz 1	Name:	5

Problem Q1-3: Cash Flow Statement [20 pts]
Use the Balance sheet and Income statement on the following pages to generate a cash flow statement for the same period in the space below.

CONSOLIDATED STATEMENT OF CASH FLOWS FOR TEST CORPORATION

Name: _____

CONSOLIDATED BALANCE SHEET FOR TEST CORPORATION

As of December 31, 2003	2003	2002
(Dollars in millions) Assets		
Current Assets:		
Cash	160	380
Accounts Receivable	110	160
Raw Materials Inventory	300	250
Merchandise Inventory	230	290
Other Current Assets	<u>1,900</u>	<u>1,700</u>
Total Current Assets	2,700	2,780
Property, Plant, and Equipment	270	130
Less Cumulative Depreciation	(50)	(40)
Other Fixed Assets	350	310
Total Assets	3,270	3,180
Liabilities		
Current Liabilities:		
Accounts Payable	630	330
Current Portion of Long Term Debt	180	230
Other Current Liabilities	<u>320</u>	<u>400</u>
Total Current Liabilities	1,130	960
Long Term Liabilities:		
Long Term Bank Loans	140	340
Other Liabilities	<u>250</u>	<u>350</u>
Total Long Term Liabilities	390	690
Total Liabilities	1,520	1,650
Shareholders' Equity		
Paid-in Capital	100	80
Retained Earnings	1,650	1,450
Total Shareholders' Equity	1,750	1,530
Total Liabilities + Shareholders' Equity	3,270	3,180

CONSOLIDATED INCOME STATEMENT FOR TEST CORPORATION

Year ended December 31, 2003 (Dollars in millions)	
Sales Revenues	38,500
Less Cost of Sales	(26,300)
Gross Profit	12,200
Less Operating Expenses	(8,600)
Income before Taxes	3,600
Provision for Income Taxes	(1,900)
Net Income	1,700
Less Dividends Paid	(1,500)
Retained Earning	200

Quiz 1	Name:	. 8
Explai	Q1-4: Handling Transactions [10 pts] in how you would treat each of the following transactions for PORATION. (Show using a T account) Use the list of account	
	(a) The firm sells merchandise during the year 2003 at a \$\\$X. It receives \$Y immediately, with the remainder sells.	
	(b) The first purchases equipment in cash costing \$Z.	
	Q1-5: <i>Ratios</i> [9 pts] d calculate the following ratios for Test Corporation as of I	December 31, 2003:
(1) Return	n on Assets:	
(2) Debt t	to Equity:	
(3) Gross I	Margin:	