

FN 201 Business Finance

Midterm Exercise 2/2014

Part 1:

Question 1 (20 Points)

Balance sheets of HOMMY Inc. at the beginning and end of 2013 are presented below (in millions of dollars). The company earned \$2,000 million after tax during the year and paid cash dividends of \$200 million. The annual depreciation expense was \$1,000 million. HOMMY purchased \$2,500 million of fixed assets.

1.1 Consider any changes of key items in balance sheet below and fill in the two columns whether it is source of cash or use of cash. (10 Points)

	<u>Jan 1, 2013</u>	<u>Dec 31, 2013</u>	Source of Cash	Use of Cash
ASSETS				
Cash	\$ 1,200	\$ 900		
Accounts receivable	1,400	2,400		
Inventories	400	1,200		
Total current assets	<u>\$ 3,000</u>	<u>\$ 4,500</u>		
Gross fixed assets	12,000	14,500		
Less: Accumulated depreciation	4,500	5,500		
Net fixed assets	<u>\$ 7,500</u>	<u>\$ 9,000</u>		
Total assets	<u><u>\$10,500</u></u>	<u><u>\$13,500</u></u>		
LIABILITIES AND EQUITY				
Accounts payable	\$ 1,400	\$ 1,100		
Notes payable	1,000	1,000		
Long-term debt	1,000	2,500		
Common stock	3,000	3,000		
Retained earnings	4,100	5,900		
Total liabilities and equity	<u><u>\$10,500</u></u>	<u><u>\$13,500</u></u>		

Question 1 (continued)

1.2 From information obtained above and (1.1), classify each items as an operating activity, an investing activity, or a financing activity, and summarize cash flow position in below table. **(10 Points)**

Operating activities:

<i>Items</i>	<i>Cash inflow / outflow</i>
<i>Net Cash Inflow or Outflow</i>	

Investing activities:

<i>Items</i>	<i>Cash inflow / outflow</i>
<i>Net Cash Inflow or Outflow</i>	

Financing activities:

<i>Items</i>	<i>Cash inflow / outflow</i>
<i>Net Cash Inflow or Outflow</i>	

Question 2 (30 Points)

An incomplete 2013 balance sheet for O’Keefe Industries is expressed below together with the following key financial data:

**O’Keefe Industries Balance Sheet
December 31, 2013**

ASSETS		LIABILITIES AND STOCKHOLDERS' EQUITY	
Cash	\$ 30,000	Accounts payable	\$ 120,000
Marketable securities	25,000	Notes payable	
Account receivable	_____	Accruals	_____
Inventories	_____	Total current liabilities	_____
Total current assets	_____	Long-term debt	_____
Net fixed assets	_____	Stockholders' equity	\$ 600,000
Total assets	_____	Total liabilities and stockholders' equity	_____

- (1) Sales totaled \$1,800,000.
- (2) The gross profit margin was 25%.
- (3) Inventory turnover was 6.0.
- (4) There are 360 days in the year.
- (5) The average collection period was 40 days.
- (6) The current ratio was 1.60.
- (7) The total asset turnover ratio was 1.20.
- (8) The debt ratio was 60%.
- (9) O’Keefe had common stocks outstanding at 150,000 shares with market price of \$5.15.
- (10) EBIT of O’Keefe was \$200,000, which resulted in net income of \$90,000.

2.1 Complete the 2013 balance sheet for O’Keefe Industries by using provided information. **(10 Points)**

Note: Please fill your answer into the balance sheet above.

Question 2 (continued)

2.2 Assume the company's corporate tax was at 40% and cost of capital was 10%, calculate the following measures of shareholders' wealth and provide the meaning. **(10 Points)**

A) Market Value Added (MVA) and Market-to-Book ratio

B) Economic Value Added (EVA)

2.3 Given the preceding financial statements, complete the following table. Assume that the industry averages given in the table are applicable for both 2012 and 2013. Summarize the company's overall financial condition, comparing with its own performance and industry average. **(10 Points)**

Ratio	Industry average	Actual 2012	Actual 2013
Current ratio	1.80	1.74	1.60
Quick ratio	0.70	0.78	
Inventory turnover ^a	7.50	4.59	6.00
Average collection period ^a	30 days	38 days	40 days
Debt ratio	50%	57%	60%
Return on total assets	4.00%	5.00%	
Return on common equity	12.50%	14.75%	

^a Based on a 360-day year.

Question 3 (20 Points)

Winnie Corp. has an inventory conversion period of 60 days, an average collection period of 38 days, and an account payable period of 30 days. Winnie's annual sales are \$3,421,875 which are all on credit, and cost of goods sold is 75% of sales. Assume a 360-day year.

3.1 Calculate firm's cash conversion period and the amount of resources or minimum cash needed to support its cash conversion cycle. **(10 Points)**

3.2 Discuss the importance of the cash conversion cycle and possible management that might be able to reduce the cash conversion cycle. **(10 Points)**

Question 4 (25 Points)

Suppose that Win Hom Sofa has a line of credit with a quoted interest rate of 10 percent and a compensating balance of 25 percent. The compensating balance earns no interest.

4.1 If the company needs \$60,000, how much total loan will it need to borrow? And what is the actual interest rate from this loan? **(10 Points)**

4.2 Suppose that the bank offers two alternative loan contracts without compensating balance requirement, but the company has to accept different agreements as follows:

Plan A – Paying an annual interest rate of 12 percent quarterly

Plan B – Paying an annual interest rate of 12 percent of a discount bank loan (discount interest)

Given total loan from (4.1), calculate actual interest rate of Plan A and Plan B. **(10 Points)**

4.3 Examining the original loan contracts with Plan A and Plan B, which plan should Win Hom accept? Why? **(5 Points)**

Question 5 (25 Points)

When you were born, your dear old Uncle Winnie promised to deposit \$1,500 in a savings account for you on each and every one of your birthdays, beginning with your first. The savings account bears a 7 percent compound annual rate of interest.

5.1 Draw the saving time lines of your money. **(5 Points)**

5.2 Suppose you have just turned 20 and want all the cash. How much would you have received? **(10 Points)**

5.3 Ignore the amount from (5.2) since it turns out that dear old (forgetful) Uncle Winnie forgot making deposits on your fifth, seventh, and eleventh birthdays. How much is in the account now – on your twentieth birthday? **(10 Points)**

Part 2:

Question 1 (20 Points)

Winnie Corporation, a major producer in automobile industry, had key financial statements as the attached tables. In 2012, the company paid dividends of \$18,000. Also, it issued \$150,000 in bonds, and purchased machine, some equipment, and other fixed asset for cash. Based on information attached, please help Winnie Corporation to form the statement of cash flows by identifying cash flows from operating, investing, and financing activities.

Balance Sheet			
Assets		Dec 31, 2012	Dec 31, 2011
Cash		\$37,000	\$49,000
Accounts Receivable		\$26,000	\$36,000
Prepaid Expenses		\$6,000	\$0
Machine		\$70,000	\$0
Equipment	\$68,000		\$0
Accumulated Depreciation	<u>\$10,000</u>	\$58,000	\$0
Other fixed assets	\$200,000		\$0
Accumulated Depreciation	<u>\$11,000</u>	\$189,000	\$0
Total Assets		<u>\$386,000</u>	<u>\$85,000</u>
Liabilities and Stockholder Equity			
Accounts Payable		\$40,000	\$5,000
Bonds Payable		\$150,000	\$0
Common Stock		\$60,000	\$60,000
Retained Earnings		\$136,000	\$20,000
Total Liabilities and Stockholder Equity		<u>\$386,000</u>	<u>\$85,000</u>

Question 1 (continued)

Income Statement as Dec 31, 2012

Revenue		\$492,000
Operating Expenses	\$269,000	
Depreciation	<u>\$21,000</u>	<u>\$290,000</u>
Income before Income Taxes		\$202,000
Income Tax Expense		<u>\$68,000</u>
Net Income		<u>\$134,000</u>

ANSWER

Statement of Cash Flows

Cash Flow from Operating Activities

<u>Net Income</u>		<u>\$134,000</u>
<u>Adjustments to reconcile net income to net cash</u>		
<u>Accts Receivable decrease</u>	<u>\$10,000</u>	
<u>Prepaid Expense increase</u>	<u>(\$6,000)</u>	
<u>Accts Payable Increase</u>	<u>\$35,000</u>	
<u>Depreciation</u>	<u>\$21,000</u>	
		<u>\$60,000</u>
<u>Net cash provided from Operating Activities</u>		<u>\$194,000</u>

Investing Activities

<u>Machin</u>	<u>(\$70,000)</u>	
<u>Other fixed assets</u>	<u>(\$200,000)</u>	
<u>Equipment Purchase</u>	<u>(\$68,000)</u>	<u>(\$338,000)</u>

Financing Activities

<u>Dividend payment to shareholders</u>	<u>(\$18,000)</u>	
<u>Issuance of Bonds Payable</u>	<u>\$150,000</u>	<u>\$132,000</u>
<u>Net Decrease in Cash</u>		<u>(\$12,000)</u>
<u>Cash Jan 1, 1996</u>		<u>\$49,000</u>
<u>Cash Dec 31, 1996</u>		<u>\$37,000</u>

Question 2 (30 Points)

The financial statements of Win Hom Industries for the year ended December 31, 2013, follow.

Win Hom Industries' Income Statement for the Year Ended December 31, 2013

Sale revenue	160,000
Less: Cost of goods sold	106,000
Gross profit	54,000
Less Operating expenses	
Selling expense	16,000
General and administrative expenses	10,000
Lease expense	1,000
Depreciation expense	10,000
Total operating expense	37,000
Operating profits	17,000
Less: Interest expense	6,100
Net profits before taxes	10,900
Less: Taxes	4,360
Net profit after taxes	6,540

Win Hom Industries' Balance Sheet December 31, 2013

Assets	
Cash	500
Marketable securities	1,000
Account receivable	25,000
Inventories	45,500
Total current assets	72,000
Land	26,000
Buildings and equipment	90,000
Less: Accumulated depreciation	38,000
Net fixed assets	78,000
Total assets	150,000
Liabilities and Stockholders' Equity	
Account payable	22,000
Notes payable	47,000
Total current liabilities	69,000
Long-term debt	22,950
Common stock ^a	31,500
Retained earnings	26,550
Total liabilities and stockholders' equity	150,000

^a The firm's 3,000 outstanding shares of common stocks closed 2013 at a price of \$25 per share.

Question 2 (continued)

2.1 With the company's corporate tax at 40%, calculate the following measures of shareholders' wealth and provide the meaning. (10 Points)

A) Market Value Added (MVA) and Market-to-Book ratio

ANSWER

$$MV = 3,000 \times 25 = 75,000$$

$$BV = 31,500 + 26,550 = 58,050$$

Hence, $MVA = 16,950$
 $M/B \text{ ratio} = 1.29199$

B) Economic Value Added (EVA)

ANSWER

If further assume that cost of capital = 10%, then

$$\begin{aligned} EVA &= EBIT \times (1 - \text{tax rate}) - (\text{cost of capital}) \times (\text{capital}) \\ &= 17,000 \times (1 - 40\%) - (10\%) \times (22,950 + 58,050) \\ &= 10,200 - 8,100 \\ &= \mathbf{2,100} \end{aligned}$$

2.2 Use the preceding financial statements to complete the following table. Assume that the industry averages given in the table are applicable for both 2012 and 2013. (10 Points)

Ratio	Industry average	Actual 2012	Actual 2013
Current ratio	1.80	1.84	1.04348
Quick ratio	0.70	0.78	0.3841
Inventory turnover ^a	2.50	2.59	2.3297
Average collection period ^a	37 days	36 days	56.25 days
Debt ratio	65%	67%	61.30%
Time interest earned ratio	3.80	4.00	2.7869
Gross profit margin	38%	40%	33.75%
Net profit margin	3.50%	3.60%	4.0875%
Return on total assets	4.00%	4.00%	4.36%
Return on common equity	9.50%	8.00%	11.26615%

^a Based on a 360-day year.

2.3 Summarize the company's overall financial condition, comparing with its own performance and industry average, as related to liquidity, activity, debt, and profitability. (10 Points)

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Company's liquidity decreased from year 2012 to 2013 implying the ability of firm to pay off their liabilities and when comparing to the industry average, company is still lower which should be improved to the higher number of current and quick ratios. The company performance in liquidity falls over year 2012 to 2013

Activity Ratios as indicated by Inventory and average collection period not quite good comparing to the industry average because company required more day to collect cash but shorten time to turn turn asset to sales

Company assets have been financed by debts not as much as the year before (2012) or the industry average which quite a good sign, however, the ability to pay interest with business income still lower than the industry and the year 2012

Overall, Profitability of firms is quite well. Firm performs quite good as the better/higher ratio over the year 2012 to 2013, And even better than the industry average in RoA and ROE which is the good sign of positive profits and high rate of return to investors.

2.3 Summarize the company's overall financial condition, comparing with its own performance and industry average, as related to liquidity, activity, debt, and profitability. (10 Points)

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For liquidity, the company's liquidity decreases and falls below industry average.

For activity, inventory turnover also falls from last year and industry average.

There might be some sales problem or ineffective inventory management. And average collection ~~year~~ days is longer than last year and industry average.

Might be problem with credit extension and management.

For debt, debt ratio is lower than last year and industry average. Ability of firm to cover interest expense is lower than last year and industry.

For profitability, Overall is above last year and industry average. Significant increase in profitability.

Question 3 (20 Points)

Maggie Inc. turns over its inventory 6 times each year; it has an average collection period of 45 days and an average payment period of 30 days. The firm's annual operating-cycle investment is \$3 million. Assume a 360-day year.

3.1 Calculate firm's operating cycle, cash conversion cycle, its daily cash operating expenditure, and the amount of resources needed to support its cash conversion cycle. (10 Points)

ANSWER

$$\text{Inventory days} = 360 / 6 = 60 \text{ days}$$

$$\text{Collection period} = 45 \text{ days}$$

$$\text{Hence, operating cycle} = 105 \text{ days}$$

$$\text{Daily cash for operating} = 3,000,000 / 105 = 28,571.42875$$

$$\text{Cash conversion period} = 105 - 30 \text{ days} = 75 \text{ days}$$

The amount of resources to support cash cycle:

$$= 28,571.42875 \times 75$$

$$= 2,142,857.143$$

3.2 Discuss the importance of the cash conversion cycle and possible management that might be able to reduce the cash conversion cycle. (10 Points)

ANSWER

The importance of cash conversion cycle

= Cash conversion cycle reflects minimum cash to be required and tied up in net operating working capital. Rather than using the reserved cash for other investment, company has to maintain it and thus incur opportunity cost of carrying its working capital.

Possible management to reduce cash conversion cycle:

= Necessary management to speed up collection period and inventory conversion (inventory days), and to have longer payable deferral (accounts payable) days.

Question 4 (20 Points)

On March 1, 2012, MAMA Corporation purchased \$100,000 worth of inventory on credit with terms of 1/20, net/60. In the past, MAMA has always followed the policy of making payment 1 month (30 days) after the goods are purchased.

If MAMA were to take advantage of the discount and pay the bill on March 20 rather than on March 30, the firm would have to borrow the necessary funds for the 10 extra days. National's borrowing terms with a local bank are estimated to be at 9 percent (annual rate), with a 15 percent compensating balance for the term of the loan.

MAMA feels that it makes little sense to take out a 9 percent loan with a compensating balance of 15 percent in order to save 1 percent on its \$100,000 by paying the account 10 days earlier than it had planned.

4.1 Calculate the opportunity cost rate of foregoing cash discount if MAMA follows the traditional payment policy (payment is made on the 30th day)? (7 Points)

ANSWER

Opportunity cost

$$\begin{aligned} &= \frac{1}{99} \times \frac{365}{(\text{Actual payment} - \text{discount period})} = \frac{1}{99} \times \frac{365}{(30 - 20)} \\ &= 36.8687\% \end{aligned}$$

4.2 If MAMA rejects such traditional payment policy, what will be the true interest cost rate of borrowing the necessary funds for the 10 extra days? (8 Points)

ANSWER

$$\text{Necessary fund to borrow} = \$100,000 \times (1 - 1\%) = 99,000$$

$$\begin{aligned} \text{Compensating balance at 15\%, thus total loan to borrow:} \\ = 99,000 / (1 - 15\%) &= 116,470.5882 \end{aligned}$$

$$\text{Cost of borrowing at 9\%} = 9\% \times (116,470.5882) = 10,482.35294$$

$$\text{Usable fund} = 99,000$$

$$\begin{aligned} \text{Thus, actual interest cost rate} &= 10,482.35294 / 99,000 \\ &= \mathbf{10.58824\%} \end{aligned}$$

4.3 Would it be to MAMA's advantage to take 1 percent discount by paying the bill 10 days earlier than usual? Why? (5 Points)

ANSWER

MAMA better take 1 percent discount. If it does not take, this will lead to substantial opportunity cost of foregoing, which is much higher than interest rate from borrow necessary fund.

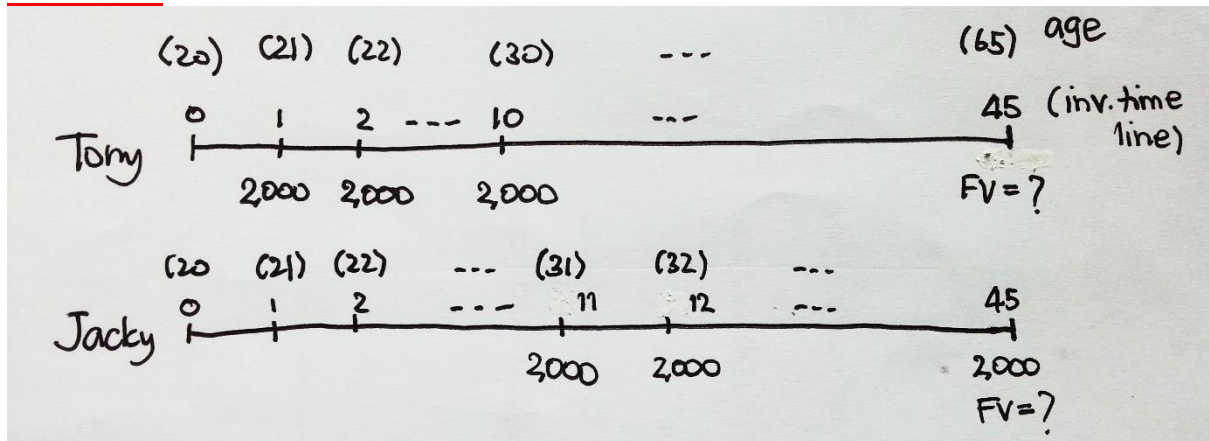
Question 5 (20 Points)

Tony has decided to start saving for his retirement. Beginning on his twenty-first birthday, Tony plans to invest \$2,000 each birthday into a savings investment earning a 7 percent compound annual rate of interest. He will continue this savings program for a total of 10 years and then stop making payments. But his savings will continue to compound at 7 percent for 35 more years, until Tony retires at age 65.

Jacky also plans to invest \$2,000 a year, on each birthday, at 7 percent, and will do so for a total of 35 years. However, he will not begin his contributions until his thirty-first birthday.

5.1 Draw the investment time lines of Tony's and Jacky's plans. (5 Points)

ANSWER



5.2 How much will Tony's and Jacky's savings programs be worth at the retirement age of 65? (10 Points)

ANSWER

$$\begin{aligned} \text{Tony's FV} &= 2,000 \times (\text{FVIFA}_{7\%, 10 \text{ years}}) \times (\text{FVIF}_{7\%, 35 \text{ years}}) \\ &= \mathbf{295,026.864} \end{aligned}$$

$$\begin{aligned} \text{Jacky's FV} &= 2,000 \times (\text{FVIF}_{7\%, 35 \text{ years}}) \\ &= \mathbf{276,480} \end{aligned}$$

5.3 Who is better off financially at retirement, and by how much? (5 Points)

ANSWER

$$\begin{aligned} \text{Tony has more saving from his program, which is higher than Jacky's} \\ &= 295,026.864 - 276,480 \\ &= \mathbf{18,546.864} \end{aligned}$$

Part 3:

Question 1 (15 Points)

Win Hom Corp. wants to identify cash change during 2013 according to the following information.

1. It allowed accounts receivable to expand by \$25 million.
2. It paid a \$30 million dividend.
3. It repaid \$25 million of short-term bank debt.
4. It earned \$60 million of net income.
5. It reduced inventory, releasing \$5 million.
6. It invested \$30 million.
7. It purchased \$25 million of marketable securities.
8. It issued \$30 million of long-term debt.
9. It set aside \$20 million as depreciation.
10. It increased its accounts payable – borrowing an additional \$25 million from its suppliers.

1.1 Complete below table to get cash change position for Win Hom in 2013. (10 Points)

Cash flows from operating activities:	
<i>Net cash flow from operating activities</i>	
Cash flows from investing activities:	
Cash flows from financing activities:	
<i>Net cash flow from financing activities</i>	
Net change in cash	

ANSWER

Cash flows from operating activities:	
A/R	-25
Net income	+60
Inv	+5
Depreciation	+20
A/P	+25
<i>Net cash flow from operating activities</i>	85
Cash flows from investing activities:	
Inv	-30
Cash flows from financing activities:	
Div	-30
Short-term debt	-25
Purchase mkt sec	-25
Long-term debt	+30
<i>Net cash flow from financing activities</i>	-50
Net change in cash	5

1.2 Given cash changes above, explain company's strategic operations, including operating, investing, and financing matters in 2013. (5 Points)

ANSWER

In mature stage because of high profit, moderate investment and payback money to stakeholder (in financing)

Question 2 (30 Points)

The key financial statements of Total Access Communication PLC. (DTAC) and Advanced Info Service PLC. (AIS) for the year ended December 31, 2013, are as follows.

BALANCE SHEET (Million Baht)	DTAC 2013	AIS 2013
Cash & Equivalent	5,472	16,831
Accounts receivable	10,351	10,264
Inventory	1,683	2,865
PP&E-net	15,120	35,922
Other fixed assets	72,428	45,490
Total assets	<u>105,054</u>	<u>111,372</u>
Accounts payable	28,190	11,718
ST debts & current portion	8,296	5,303
Long-term debt	23,164	15,355
Other long-term liabilities	4,029	5,287
Total liabilities	<u>72,334</u>	<u>65,480</u>
Paid-up capital	4,736	2,973
Share premium	23,543	22,372
Retained earnings	2,782	20,403
Shareholder's equity	<u>32,720</u>	<u>45,892</u>
Total Liab.&Shareholders' equity	<u>105,054</u>	<u>111,372</u>
INCOME STATEMENT (Million Baht)	DTAC 2013	AIS 2013
Revenue	94,369	142,783
Cost of sales and services	(65,119)	(81,141)
Gross profit	<u>29,250</u>	<u>61,642</u>
Selling, general, and administration expenses	(13,630)	(14,847)
EBIT	<u>15,620</u>	<u>46,795</u>
Interest expense	(1,270)	(1,002)
Other income/exp.	335	871
EBT	<u>14,685</u>	<u>46,664</u>
Corporate tax	(2,888)	(10,008)
After-tax net profit (loss)	<u>11,797</u>	<u>36,656</u>

2.1 In 2013, DTAC had 2,400 million shares of common stocks outstanding with market price at 105.50 Baht. Assume DTAC's effective corporate tax was at 19.67% and cost of capital was 10%, calculate the following measures of shareholders' wealth of DTAC and provide the meaning. **(10 Points)**

A) Market Value Added (MVA)

ANSWER

$$\begin{aligned} \text{MVA} &= \text{MV} - \text{BV} \\ &= (2,400 \times 105.5) - 32,720 \\ &= \mathbf{220,480.00 \text{ million}} \end{aligned}$$

B) Economic Value Added (EVA)

(1) ANSWER

$$\begin{aligned} \text{(2) EBIT} \times (1-t) - \text{Cost of all financing} \\ &= 15620 \times (1-19.67\%) - 10\% \times (72,334 + 32,720) \\ &= \mathbf{6,959.146} \end{aligned}$$

$$\begin{aligned} \text{(3) NI} + \text{Int} \times (1-t) - \text{Cost of all financing} \\ &= 11,797 + 1,270 \times (1-19.67\%) - 10\% \times (72,334 + 32,720) \\ &= \mathbf{7,228.791} \end{aligned}$$

2.2 Use the preceding financial statements of DTAC to compute key financial ratios by completing the following table. **(10 Points)**

Ratio	AIS	DTAC
Current ratio	1.7602	
Quick ratio	1.5919	
Inventory turnover ^a	28.3215	
Average collection period ^a	25.8787	
Debt ratio (%)	58.7940	
Time interest earned ratio	46.7016	
Gross profit margin (%)	43.1718	
Net profit margin (%)	25.6725	
Return on total assets (%)	32.9131	
Return on equity (%)	79.8745	

^a Based on a 360-day year.

ANSWER

Ratio	AIS	DTAC
Current ratio	1.7602	0.4798
Quick ratio	1.5919	0.4337
Inventory turnover ^a	28.3215	38.6922
Average collection period ^a	25.8787	39.4871
Debt ratio (%)	58.7940	68.8541
Time interest earned ratio	46.7016	12.2992
Gross profit margin (%)	43.1718	30.9953
Net profit margin (%)	25.6725	12.5009
Return on total assets (%)	32.9131	11.2295
Return on equity (%)	79.8745	36.0544

2.3 Summarize overall financial condition of DTAC by comparing with AIS under each criterion. If you want to invest in either DTAC or AIS, which company should you choose? **(10 Points)**

ANSWER

Question 3 (25 Points)

Jackie Corp. turns over its inventory 9 times during the year, and its days sales outstanding was 36 days. Under regular payment policy, the company payables deferral period is 40 days. Jackie's daily operating cash is around \$64,000. Assume a 360-day year.

3.1 Calculate firm's cash conversion period and the amount of resources or minimum cash needed to support its cash conversion cycle. (10 Points)

ANSWER

$$\begin{aligned}\text{Cash conversion period} &= \text{Inv. Days} + \text{A/R days} - \text{A/P days} \\ &= (360/9) + 36 - 40 \text{ days} \\ &= \mathbf{36 \text{ days}}\end{aligned}$$

$$\begin{aligned}\text{Cash require} &= 36 \text{ days} \times (64,000) \\ &= \mathbf{\$2,304,000}\end{aligned}$$

3.2 Jackie normally buys inventory on account with credit term of 2/15, net 40. If the company decides to take cash discount, what effect will this have on the cash cycle and the minimum cash required? (5 Points)

ANSWER

$$\begin{aligned}\text{Cash conversion period} &= 40 + 36 - 15 \\ &= 61 \text{ days}\end{aligned}$$

$$\begin{aligned}\text{Cash require} &= 61 \text{ days} \times (64,000) \\ &= \mathbf{3,904,000}\end{aligned}$$

3.3 Will it be better for Jackie to take 2 percent discount when short-term bank loan costs 15%? Please calculate and compare the opportunity cost rate of foregoing cash discount and the actual interest rate to make decision. (10 Points)

ANSWER

$$\begin{aligned}\text{Effective loan cost} &= \left(1 + \frac{15\%}{360/25}\right)^{\frac{360}{25}} - 1 = \mathbf{16.09\%} \\ \text{Opportunity cost} &= \frac{2}{98} \times \frac{360}{(40-15)} = \mathbf{29.39\%}\end{aligned}$$

Question 4 (25 Points)

An executive of Win Hom Company Limited plans to retire at age 65 and expects to live more 10 years. He wants to receive the following annual money for living from retirement until death.

Year (after retirement)	1-5	6-7	8-10
Cash	\$10,000	\$12,000	\$15,000

As a financial planning consultant, please help this executive by answering the following questions.

4.1 Draw the financial planning time line of this executive. (5 Points)

ANSWER

Year	0	1	2	3	4	5	6	7	8	9	10
Cash		10,000	10,000	10,000	10,000	10,000	12,000	12,000	15,000	15,000	15000

4.2 Assuming an average 8% rate of return he can earn after retirement, calculate the amount he must have available at age 65 in order to receive annual money as shown in the table. (10 Points)

ANSWER

Age	65	66	67	68	69	70	71	72	73	74	75
Year	0	1	2	3	4	5	6	7	8	9	10
Cash		10,000	10,000	10,000	10,000	10,000	12,000	12,000	15,000	15,000	15000
PV		9,259.26	8,573.39	7,938.32	7,350.30	6,805.83	7,562.04	7,001.88	8,104.03	7503.73	6947.9

Sum	77,046.6907
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4.3 Suppose he is 55 years old now. Given the amount from (4.2), if he plans to save annually during his working period starting at the end of his 55th year, how much annuity must he invest into a savings program earning an 8% compound annual rate of interest? (10 Points)

ANSWER

FV =	77,046.69
FVIFA =	14.486562
Annuity =	5,318.49