

# **FN 201 Business Finance**

## **Midterm Exercise 1/2016**

### **(Guided Solution)**

## 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
<b>ASSETS</b>				
Cash	\$ 1,200	\$ 900		
Accounts receivable	1,400	2,400		1,000
Inventories	400	1,200		800
<b>Total current assets</b>	<u>\$ 3,000</u>	<u>\$ 4,500</u>		
Gross fixed assets	12,000	14,500		2,500
<i>Less: Accumulated depreciation</i>	4,500	5,500		
<b>Net fixed assets</b>	<u>\$ 7,500</u>	<u>\$ 9,000</u>		
<b>Total assets</b>	<u><u>\$10,500</u></u>	<u><u>\$13,500</u></u>		
<b>LIABILITIES AND EQUITY</b>				
Accounts payable	\$ 1,400	\$ 1,100		300
Notes payable	1,000	1,000		
Long-term debt	1,000	2,500	1,500	
Common stock	3,000	3,000		
Retained earnings	4,100	5,900		
<b>Total liabilities and equity</b>	<u><u>\$10,500</u></u>	<u><u>\$13,500</u></u>		

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>
Net income	<b>2,000</b>
Depreciation	<b>1,000</b>
Accounts receivable	<b>-1,000</b>
Inventories	<b>-800</b>
Accounts payable	<b>-300</b>
<i>Net Cash Inflow or Outflow</i>	<b>900</b>

*Investing activities:*

<i>Items</i>	<i>Cash inflow / outflow</i>
Fixed assets	<b>-2,500</b>
<i>Net Cash Inflow or Outflow</i>	<b>-2,500</b>

*Financing activities:*

<i>Items</i>	<i>Cash inflow / outflow</i>
Dividend paid	<b>-200</b>
Long-term debt	<b>1,500</b>
<i>Net Cash Inflow or Outflow</i>	<b>1,300</b>

**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	<u>160,000</u>
Account receivable	<u>200,000</u>	Accruals	20,000
Inventories	<u>225,000</u>	Total current liabilities	<u>300,000</u>
Total current assets	<u>\$480,000</u>	Long-term debt	<u>600,000</u>
Net fixed assets	<u>1,020,000</u>	Stockholders' equity	<u>\$600,000</u>
<b>Total assets</b>	<b><u>1,500,000</u></b>	<b>Total liabilities and stockholders' equity</b>	<b><u>1,500,000</u></b>

- (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.*

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

**ANSWER**

$$\begin{aligned}\text{Market Value Added (MVA)} &= \text{Market Value} - \text{Book Value} \\ &= (150,000) \times (5.15) - 600,000 \\ &= \underline{\underline{\$172,500}}\end{aligned}$$

MVA shows that market value of the company is greater than its book value (as measured by total equity) at \$172,500.

$$\begin{aligned}\text{Market-to-Book Ratio} &= \frac{150,000 \times 5.15}{600,000} \\ &= \underline{\underline{1.2875 \text{ times}}}\end{aligned}$$

Market-to-Book Ratio shows that market value of the company is higher than its book value (as measured by total equity) around 1.2875 times.

B) Economic Value Added (EVA)

**ANSWER**

$$\begin{aligned}\text{Economic Value Added (EVA)} &= \text{EBIT} \times (1-t) - [(\text{Capital}) \times (\text{Cost of capital})] \\ &= 200,000 \times (1-40\%) \\ &\quad - [(600,000+600,000) \times 10\%] \\ &= 120,000 - 120,000 = \underline{\underline{0}}\end{aligned}$$

The calculated Economic Value Added (EVA) shows that the company has no economic profit since its profit earned is equal to cost of all financing from total capital. That is, there is no excess return of the company over its cost of capital.

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	<b>0.85</b>
Inventory turnover <sup>a</sup>	7.50	4.59	6.00
Average collection period <sup>a</sup>	30 days	38 days	40 days
Debt ratio	50%	57%	60%
Return on total assets	4.00%	5.00%	<b>6.00%</b>
Return on common equity	12.50%	14.75%	<b>15.00%</b>

<sup>a</sup> 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)

### ANSWER

Inv days	60.00	
A/R days	38.00	
A/P days	30.00	
Sales	3,421,875.00	
CoGS	2,566,406.25	75% of sales
a 360-day year		

**Cash conversion period = 68**

Min cash needed:

- for Inv = 427,734.38

- for A/R = 361,197.92

- for A/P = 213,867.19

**Min cash needed = 575,065.10**

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**

- **Importance:** The cash conversion cycle is the period that company lacks of cash inflow due to trade credit given to customers but it has prior payment to account payables. As such, this implies minimum cash needed that the company has to reserve so as to run normal operations. Higher cash conversion cycle suggests that the company has to reserve more cash, and vice versa.
- **Possible Management to reduce cash conversion cycle:** Since the cash conversion cycle is the summation of inventory days and collection periods, minus account payable days. Possible management to reduce cash conversion cycle is to:
  - 1) Speed up inventory turnover (which will in turn lower the inventory days), and/or collection period from the customers.
  - 2) Delay short-term trade credit payment of the company's account payable as long as possible.

**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)**

**ANSWER**

Usable funds	60,000
Total loan =	80,000
Actual interest rate =	13.33%

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)**

**ANSWER**

$$\text{Plan A: Actual Interest Rate (EAR)} = \left(1 + \frac{12\%}{4}\right)^4 - 1 = 12.5509\%$$

$$\text{Plan B: Actual Interest Rate} = \frac{12\%(60,000)}{60,000 \times (1 - 12\%)} = 13.6364\%$$

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

**ANSWER**

Win Hom Sofa should choose Plan A since it has the lowest cost.

**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)**

**ANSWER**

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

**ANSWER**

Total money in an account would be = **61,493.24**

N	I/Y	PMT	PV	FV
20	7%	1,500	0	?

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)**

**ANSWER**

FV of the 5<sup>th</sup> year = - 4,138.55  
 FV of the 7<sup>th</sup> year = - 3,614.77  
 FV of the 11<sup>th</sup> year = - 2,757.69

Total money in an account would be  
 = 61,493.24 - 4,138.55 - 3,614.77 - 2,757.69  
 = **50,982.23**

## 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.

<b>Balance Sheet</b>			
<b>Assets</b>		<b>Dec 31, 2012</b>	<b>Dec 31, 2011</b>
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
<b>Total Assets</b>		<u>\$386,000</u>	<u>\$85,000</u>
<b>Liabilities and Stockholder Equity</b>			
Accounts Payable		\$40,000	\$5,000
Bonds Payable		\$150,000	\$0
Common Stock		\$60,000	\$60,000
Retained Earnings		\$136,000	\$20,000
<b>Total Liabilities and Stockholder Equity</b>		<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>
<b>Income before Income Taxes</b>		<b>\$202,000</b>
Income Tax Expense		<u>\$68,000</u>
<b>Net Income</b>		<b><u>\$134,000</u></b>

**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>		<b><u>\$194,000</u></b>

**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>	<b><u>(\$338,000)</u></b>

**Financing Activities**

<u>Dividend payment to shareholders</u>	<u>(\$18,000)</u>	
<u>Issuance of Bonds Payable</u>	<u>\$150,000</u>	<b><u>\$132,000</u></b>
<u>Net Decrease in Cash</u>		<b><u>(\$12,000)</u></b>
<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
<b>Gross profit</b>	<b>54,000</b>
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
<b>Operating profits</b>	<b>17,000</b>
Less: Interest expense	6,100
<b>Net profits before taxes</b>	<b>10,900</b>
Less: Taxes	4,360
<b>Net profit after taxes</b>	<b>6,540</b>

**Win Hom Industries' Balance Sheet  
December 31, 2013**

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

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

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** and M/B 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	<b>1.04348</b>
Quick ratio	0.70	0.78	<b>0.3841</b>
Inventory turnover <sup>a</sup>	2.50	2.59	<b>2.3297</b>
Average collection period <sup>a</sup>	37 days	36 days	<b>56.25 days</b>
Debt ratio	65%	67%	<b>61.30%</b>
Time interest earned ratio	3.80	4.00	<b>2.7869</b>
Gross profit margin	38%	40%	<b>33.75%</b>
Net profit margin	3.50%	3.60%	<b>4.0875%</b>
Return on total assets	4.00%	4.00%	<b>4.36%</b>
Return on common equity	9.50%	8.00%	<b>11.26615%</b>

<sup>a</sup> 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 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)

10

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

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

There might be some sale 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. sign of 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**

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

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

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

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

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

The amount of resources to support cash cycle:

$$= 28,571.42875 \times 75$$

$$= \mathbf{2,142,857.143}$$

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**

Necessary fund to borrow = \$100,000x(1 - 1%) = 99,000

Compensating balance at 15%, thus total loan to borrow:

$$= 99,000 / (1 - 15\%) = 116,470.5882$$

Cost of borrowing at 9% = 9%x(116,470.5882) = 10,482.35294

Usable fund = 99,000

Thus, actual interest cost rate = 10,482.35294 / 99,000

$$= \mathbf{10.58824\%}$$

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.

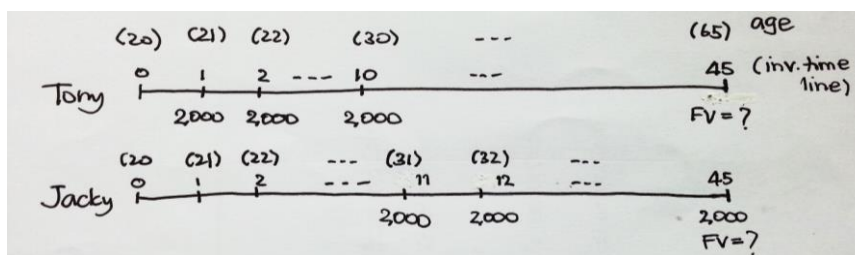
**Question 5 (20 Points)**

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)

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

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.

<b>BALANCE SHEET (Million Baht)</b>	<b>DTAC 2013</b>	<b>AIS 2013</b>
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
<b>Total assets</b>	<b>105,054</b>	<b>111,372</b>
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
<b>Total liabilities</b>	<b>72,334</b>	<b>65,480</b>
Paid-up capital	4,736	2,973
Share premium	23,543	22,372
Retained earnings	2,782	20,403
<b>Shareholder's equity</b>	<b>32,720</b>	<b>45,892</b>
<b>Total Liab.&amp;Shareholders' equity</b>	<b>105,054</b>	<b>111,372</b>

<b>INCOME STATEMENT</b> <b>(Million Baht)</b>	<b>DTAC</b> <b>2013</b>	<b>AIS</b> <b>2013</b>
Revenue	94,369	142,783
Cost of sales and services	(65,119)	(81,141)
<b>Gross profit</b>	<b>29,250</b>	<b>61,642</b>
Selling, general, and administration expenses	(13,630)	(14,847)
<b>EBIT</b>	<b>15,620</b>	<b>46,795</b>
Interest expense	(1,270)	(1,002)
Other income/exp.	335	871
<b>EBT</b>	<b>14,685</b>	<b>46,664</b>
Corporate tax	(2,888)	(10,008)
<b>After-tax net profit (loss)</b>	<b>11,797</b>	<b>36,656</b>

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)

**ANSWER**

$$\begin{aligned}
 \text{EVA} &= \text{EBIT} \times (1-t) - \text{Cost of all financing} \\
 &= 15620 \times (1-19.67\%) - 10\% \times (23,164 + 32,720) \\
 &= \mathbf{6,959.146}
 \end{aligned}$$

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

**ANSWER**

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

<sup>a</sup> Based on a 360-day year.

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**

$$\begin{aligned}
 \text{Cash conversion period} &= \text{Inv. Days} + \text{A/R days} - \text{A/P days} \\
 &= (360/9) + 36 - 40 \text{ days} \\
 &= \mathbf{36 \text{ days}} \\
 \text{Cash require} &= 36 \text{ days} \times (64,000) \\
 &= \mathbf{\$2,304,000}
 \end{aligned}$$

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**

$$\begin{aligned}
 \text{Cash conversion period} &= 40 + 36 - 15 \\
 &= 61 \text{ days} \\
 \text{Cash require} &= 61 \text{ days} \times (64,000) \\
 &= \mathbf{3,904,000}
 \end{aligned}$$

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

<b>Sum</b>	<b>77,046.6907</b>
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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 55<sup>th</sup> 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
<b>Annuity =</b>	<b>5,318.49</b>

## Part 4:

### Question 1 (20 Points)

Balance Sheet of WINNIE Inc. at the end of 2010 are presented below. It was found that during 2010, the company paid dividends of \$2,500, and paid \$46,000 in cash to acquire new fixed assets. No debt was retired during 2010.

1.1 Use the following data from Balance Sheet of Winie Inc. to identify key accounting entry whether it is source of cash or use of cash. (10 Points)

	<b>2010</b>	<b>2009</b>	<b>Source of Cash</b>	<b>Use of Cash</b>
<b>ASSETS</b>				
Cash	4,000	14,000		
Accounts receivable	30,000	39,500	<b>9,500</b>	
Inventory	37,000	34,000		<b>3,000</b>
Fixed assets	316,000	270,000		<b>46,000</b>
Accumulated Depreciation	(45,000)	(30,000)		
<b>Total assets</b>	<b>342,000</b>	<b>327,500</b>		
<b>LIABILITIES &amp; EQUITY</b>				
Accounts payable	18,000	16,000	<b>2,000</b>	
Wages payable	4,000	7,000		<b>3,000</b>
Note payable	173,000	160,000	<b>13,000</b>	
Capital stock	88,000	84,000	<b>4,000</b>	
Retained earnings	59,000	60,500		
<b>Total Liabilities &amp; Equity</b>	<b>342,000</b>	<b>327,500</b>		

1.2 From information obtained in (1.1) and Income Statement below, classify each item as cash flow from operating activity, investing activity, or financing activity, and summarize cash flow position in below table. **(10 Points)**

<b>Income Statement</b>	<b>2010</b>
Sales	200,000
Cost of goods sold	(123,000)
Depreciation expense	(15,000)
Insurance expense	(11,000)
Wage Expense	(50,000)
Net Income	<u>1,000</u>

<i>Items</i>	<i>Cash inflow / outflow</i>
<b><i>Cash Flow from Operations:</i></b>	
Net Income	<b>1,000</b>
Depreciation Expense	<b>15,000</b>
<b>Accounts receivable</b>	<b>9,500</b>
<b>Inventory</b>	<b>(3,000)</b>
<b>Accounts payable</b>	<b>2,000</b>
<b>Wages payable</b>	<b>(3,000)</b>
<i>Net Cash Inflow or Outflow</i>	<b>21,500</b>

<b><i>Cash Flow from Investments:</i></b>	
<b>New fixed assets</b>	<b>(46,000)</b>
<i>Net Cash Inflow or Outflow</i>	<b>(46,000)</b>

<b><i>Cash flow from financing activities:</i></b>	
<b>Dividend payout</b>	<b>(2,500)</b>
<b>Note payable</b>	<b>13,000</b>
<b>Capital stock</b>	<b>4,000</b>
<i>Net Cash Inflow or Outflow</i>	<b>14,500</b>

Net Cash Flow	<b>(10,000)</b>
Beginning Cash Balance	<b>14,000</b>
Ending Cash Balance	<b>4,000</b>

**Question 2 (30 Points)**

Win Hom Railroad, a public transportation company, would like to form a complete Balance Sheet and Income Statement for the year end 2013. However, some of the entries were missing. The only available data were financial ratios which could help the finance department to work out.

**2013 INCOME STATEMENT (Unit: Million US\$)**

Net sales	<b>180.00</b>
Cost of goods sold	<b>110.00</b>
Selling, general, and administrative expenses	10.00
Depreciation	20.00
<b>Earnings before interest and taxes (EBIT)</b>	<b>40.00</b>
Interest expense	<b>5.00</b>
<b>Income before tax</b>	<b>35.00</b>
Tax	<b>10.50</b>
<b>Net income</b>	<b>24.50</b>

**2013 BALANCE SHEET (Unit: Million US\$)**

	<b>2013</b>
<b>Assets</b>	
Cash and marketable securities	<b>11.00</b>
Receivables	<b>44.00</b>
Inventories	<b>22.00</b>
<b>Total current assets</b>	<b>77.00</b>
Net property, plant, and equipment	<b>38.00</b>
<b>Total assets</b>	<b>115.00</b>

<b>Liabilities and shareholders' equity</b>	
Accounts payable	<b>25</b>
Notes payable	<b>30</b>
<b>Total current liabilities</b>	<b>55.00</b>
Long-term debt	<b>23.00</b>
Shareholders' equity	<b>37.00</b>
<b>Total liabilities and shareholders' equity</b>	<b>115</b>

2.1 Complete the 2013 Balance Sheet and Income Statement for Win Hom Railroad by using the financial ratios provided. Assume a 360-day year. Fill your answer into the Balance Sheet and the Income Statement on previous page. **(10 Points)**

<b>Ratios</b>	<b>2013 Win Hom Railroad</b>
Long-term debt ratio	0.20
Times interest earned	8.00
Current ratio	1.40
Quick ratio	1.00
Cash ratio	0.20
Return on assets	21.30%
Return on equity	66.22%
Inventory turnover	5.00
Average collection period	88.00 days

*Note: You may use the space below to draft your answer.*

2. 2 Financial Manager of Win Hom Railroad wanted to measure overall performance of the company. She wondered whether the benchmark should be BangChak Hospital, which is a company in health service industry, or its own performance of the previous year. How would you suggest? Why? **(5 Points)**

<b>Ratios</b>	<b>2013 Win Hom Railroad</b>	<b>2013 BangChak Hospital</b>	<b>2012 Win Hom Railroad</b>
Long-term debt ratio	0.20	0.40	0.30
Times interest earned	8.00	5.00	6.50
Current ratio	1.40	2.00	1.20
Quick ratio	1.00	0.90	0.85
Cash ratio	0.20	0.75	0.25
Return on assets	21.30%	25.00%	20.00%
Return on equity	66.22%	45.00%	50.00%
Inventory turnover	5.00	10.00	3.00
Average collection period	88.00 days	28.00 days	75.00 days

### ANSWER

If we use company as a benchmark, the benchmark company should be within the same industry. Otherwise, we should compare the company's operating performance by benchmarking with the previous year(s).

2.3 Summarize the company's overall performance compared with an appropriate benchmark you suggested from (2.2). **(15 Points)**

**ANSWER**

**Question 3 (35 Points)**

MWH Corporation purchases the inventory under the credit terms of **2/15, net 45** for the whole year. Since the company believes that it could not find advantage from taking 2 percent discount, it always takes the full 45 days to pay its bills. Thus, the average payment period is 45 days. A new member in finance department considered that there might be benefit from taking cash discount by paying on the 15th day after purchasing. However, this will require additional short-term capital. If MWH turns over its inventory 6 times each year and has an average collection period of 30 days. The company's annual operating-cycle investment is \$630 million. Assume a 360-day year.

3.1 In case that MWH takes the full 45 days to pay its bills, what is the company's cash cycle and the amount of resources needed to support the cycle? **(10 Points)**

**ANSWER**

	<b>A/R days</b>	<b>Inv days</b>	<b>AP days</b>	<b>Cash Cycle</b>	<b>Daily cash</b>	<b>Min. Cash Required</b>
Not take	30	60	45	45	7	315

3.2 If MWH pays its bills on the 15th date, how much is the additional short-term capital required to support the cash cycle? **(10 Points)**

**ANSWER**

	<b>A/R days</b>	<b>Inv days</b>	<b>AP days</b>	<b>Cash Cycle</b>	<b>Daily cash</b>	<b>Min. Cash Required</b>
Not take	30	60	15	75	7	525

Hence, the additional short-term capital required is  $525 - 315 = \$210$  million.

3.3 Is there any cost associated with the decision of not taking cash discount? If so, what is such cost and how to calculate? **(10 Points)**

**ANSWER**

The opportunity cost of foregoing a cash discount of the credit term **2/15, net 45**

$$= \frac{2}{98} \times \frac{360}{(45 - 15)} = 24.49\%$$

3.4 What would be the criteria to help the company making decision whether it should take benefits from cash discount? Explain. **(5 Points)**

**ANSWER**

Qualitatively speaking, the criterion is to compare the opportunity cost of foregoing a cash discount with the actual cost of short-term debt. That is, if the opportunity cost of foregoing a cash discount is greater (lower) than the actual cost of short-term debt, the company should take (not take) cash discount.

**Question 4 (35 Points)**

Jammy and Tony, a 20-year-old officer, have planned for their retirement. Both will retire at age 65 and expect to live to age 75. Assume an annual compound interest rate is fixed at 8% for the whole period of investment. Please suggest them by answering the following questions.

4.1 If they want to receive \$15,000 annually from retirement until death, what will be the amount they must have available at retirement (at age 65)? Draw an investment time line and show your calculation. **(10 Points)**

**ANSWER**

The amount they must have available at retirement (at age 65)  
= 100,651.22

N	I/Y	PMT	PV	FV
10	8%	15,000	?	0

4.2 For Tony, he will start saving on his thirty-first birthday until retirement. In order to have the total amount from (4.1), how much does he need to save equally each year? **(10 Points)**

**ANSWER**

The amount he must save equally each year = 584.1057

N	I/Y	PMT	PV	FV
35	8%	?	0	100,651.22

4.3 Jammy plans to start an annuity saving on his twenty-first birthday for a total of 10 years and then stop making payments. However, his savings will continue to compound at 8 percent until he retires at age 65. In order to have the total amount from (4.1), how much does he need to save equally each year? **(10 Points)**

**ANSWER**

From that  $100,651.22 = A \times FVIFA_{(8\%,10)} \times (1 + 8\%)^{35}$

$$6,807.4992 = A \times FVIFA_{(8\%,10)}$$

Hence, the amount he must save equally each year = **469.9182**

N	I/Y	PMT	PV	FV
10	8%	?	0	6,807.4992

4.4 According to your answers in (4.2) and (4.3), who could have less saving each year but get the same amount of (4.1)? Explain possible reasons. **(5 Points)**

**ANSWER**

Jammy could have less saving, but get the same required amount. This is because he starts saving first, so he has longer investment period. Even though a shorter period of deposit, thanks to the 8% rate of return, he could eventually earn the same amount.

**Part 5:****Question 1 (20 Points)**

Win Hom Inc. wants to identify cash changes during 2014 in the statement of cash flow.

1. 1 According to the following information, identify key accounting entry whether it is source of cash or use of cash, and to which activities it belongs.

**(10 Points)**

No.	Entry	Value (\$)	Activities	Source of Cash	Use of Cash
1	Gain on Sale of Equipment	1,800	<u>Operating</u>	<u>1,800</u>	
2	Net Income	7,000	<u>Operating</u>	<u>\$7,000</u>	
3	Bond Issuance	20,000	<u>Financing</u>	<u>\$20,000</u>	
4	Receipt from Payback of Loan Principal	25,000	<u>Investing</u>	<u>25000</u>	
5	Increase in Accounts Receivable	4,400	<u>Operating</u>		<u>- 4,400</u>
6	Increase in Accounts Payable	14,000	<u>Operating</u>	<u>14,000</u>	
7	Dividends Paid	10,000	<u>Financing</u>		<u>10,000</u>
8	Depreciation Expense	1,000	<u>Operating</u>	<u>1,000</u>	
9	Receipt from Sale of Old Equipment	1,400	<u>Investing</u>	<u>1400</u>	
10	Treasury Stock Purchased	32,000	<u>Financing</u>		<u>- 32,000</u>
11	Decrease in Prepaid Insurance	1,300	<u>Operating</u>	<u>1,300</u>	
12	Cash Paid to Construct New Buildings	40,000	<u>Investing</u>		<u>-40000</u>

1.2 From information obtained in (1.1), summarize cash flow position in below table to form the statement of cash flow. **(10 Points)**

*Note: For simplicity, you may write the number of entry instead of full record to save time.*

<b>No.</b>	<b>Items</b>	<b>Cash inflow / outflow</b>
	<b><i>Cash Flow from Operations:</i></b>	
<u>2</u>	Net Income	<u>\$7,000</u>
<u>8</u>	Depreciation Expense	<u>1,000</u>
<u>5</u>	Increase in Accounts Receivable	<u>- 4,400</u>
<u>6</u>	Increase in Accounts Payable	<u>14,000</u>
<u>11</u>	Decrease in Prepaid Insurance	<u>1,300</u>
<u>1</u>	Gain on Sale of Equipment	<u>1,800</u>
	<i>Net Cash Inflow or Outflow</i>	<u>20,700</u>

	<b><i>Cash Flow from Investments:</i></b>	
<u>4</u>	Cash receipt from payback of loan principal	<u>25,000</u>
<u>9</u>	Cash receipt from sale of old equipment	<u>1,400</u>
<u>12</u>	Cash paid to construct new buildings	<u>-40,000</u>
	<i>Net Cash Inflow or Outflow</i>	<u>-13,600</u>

	<b><i>Cash flow from financing activities:</i></b>	
<u>3</u>	Bond issuance	<u>\$20,000</u>
<u>7</u>	Dividends Paid	<u>-10,000</u>
<u>10</u>	Treasury Stock Purchased	<u>-32,000</u>
	<i>Net Cash Inflow or Outflow</i>	<u>-22,000</u>

	Net Cash Flow	<u>-14,900</u>
	Beginning Cash Balance	<b>10,000</b>
	Ending Cash Balance	<u>-4,900</u>

**Question 2 (25 Points)**

Bualuang Securities summarized key financial statements for the year ended December 31, 2014 of the two important companies in the Energy & Utilities industry, which are BANPU Public Company Limited (BANPU) and Electricity Generating Public Company Limited (EGCO). Income Statement and Balance Sheet are reported as follows:

**Income Statement**

<b>(Unit: Million Baht)</b>	<b>BANPU</b>	<b>EGCO</b>
Revenue	102,122	17,201
Cost of sales and services	(79,272)	(10,310)
<b>Gross profit</b>	<b>22,850</b>	<b>6,891</b>
Operating Expenses	(14,638)	(2,956)
<b>EBIT</b>	<b>8,212</b>	<b>3,935</b>
Interest expense	(4,271)	(2,794)
Other income/exp.	1,443	1,853
<b>EBT</b>	<b>5,384</b>	<b>2,994</b>
Corporate tax	(2,260)	(792)
<b>Profit (Loss)</b>	<b>3,124</b>	<b>2,202</b>

**Balance Sheet**

<b>(Unit: Million Baht)</b>	<b>BANPU</b>	<b>EGCO</b>
Cash & Equivalent	13,951	8,653
Accounts receivable	10,107	3,358
Inventory	55,758	2,603
PP&E-net	43,883	55,275
Other fixed assets	153,735	90,798
<b>Total assets</b>	<b>277,434</b>	<b>160,687</b>
Accounts payable	1,233	791
ST debts & current portion	11,647	15,681
Long-term debt	96,802	67,735
Other long-term liabilities	38,640	2,261
<b>Total liabilities</b>	<b>148,322</b>	<b>86,468</b>
Paid-up capital	2,582	5,265
Share premium	5,058	8,649
Retained earning	71,472	60,305
<b>Share holders' equity</b>	<b>79,112</b>	<b>74,219</b>
<b>Total Liab. &amp; Equity</b>	<b>227,434</b>	<b>160,687</b>

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

<b>Ratio <sup>a</sup></b>	<b>BANPU</b>	<b>EGCO</b>
Current ratio	6.20	<u><b>0.89</b></u>
Quick ratio	1.87	<u><b>0.73</b></u>
Inventory turnover	1.42	<u><b>3.96</b></u>
Average collection period	35.63	<u><b>70.28</b></u>
Debt ratio	53.46%	<u><b>53.81%</b></u>
Time interest earned ratio	1.92	<u><b>1.41</b></u>
Gross profit margin	22.38%	<u><b>40.06%</b></u>
Net profit margin	3.06%	<u><b>12.80%</b></u>
Return on total assets	1.13%	<u><b>1.37%</b></u>
Return on common equity	3.95%	<u><b>2.97%</b></u>

<sup>a</sup> Based on a 360-day year.

2.2 Summarize overall financial performance of EGCO comparing with BANPU under each criterion. If you want to invest either in BANPU or EGCO, which company would you recommend? **(15 Points)**

**ANSWER**

**Question 3 (40 Points)**

Winnie Manufacturing reported sales last year of \$5,000 million with 30% gross profit margin and inventory level at \$437.50 million. The company had an average collection period of 60 days and an average payment period of 45 days. Assume a 360-day year.

3.1 Calculate the company's cash conversion cycle and the amount of resources needed to support the cash conversion cycle. **(10 Points)**

**ANSWER**

Days	360.00		Inv Day	45.00
Sales	5,000.00		AR day	60.00
COGS	3,500.00		AP day	45.00
Inventory	437.50		<b><u>Cash cycle</u></b>	<b><u>60.00</u></b>
Inv Turn	8.00			

Inv Investment	437.50
AR Investment	833.33
AP Investment	437.50
<b><u>Min Cash</u></b>	<b><u>833.33</u></b>

3.2 Assume that inventory of the company was transacted with the credit terms of **2/15, net 45**. If Winnie decides to take cash discount and makes payment on the 15th day after purchasing, how much is the additional short-term capital needed to support the cash cycle? **(10 Points)**

**ANSWER**

Days	360.00		Inv Day	45.00
Sales	5,000.00		AR day	60.00
COGS	3,500.00		AP day	15.00
Inventory	437.50		<b><u>Cash cycle</u></b>	<b><u>90.00</u></b>
Inv Turn	8.00			

Inv Investment	437.50
AR Investment	833.33
AP Investment	145.83
<b><u>Min Cash</u></b>	<b><u>1,125.00</u></b>

$$\begin{aligned} \text{Additional} &= \underline{1,125 - 833.33} \\ &= \underline{291.67} \end{aligned}$$

3.3 To support the additional capital from (3.2), Winnie has to borrow from Bank Z for 30 days with a quoted rate of 12% per year. By comparing the opportunity cost of foregoing a cash discount and the actual cost of bank loan, would you recommend the company to take cash discount? Why? **(10 Points)**

**ANSWER**

**Not take => Opportunity cost** =  $\frac{2}{98} \times \frac{360}{30} = 24.4898\%$      **24.4898%**

**Take => Actual Cost of Bank Loan** =  $\left(1 + \frac{12\%}{12}\right)^{12} - 1 = 12.6825\%$      **12.6825%**

**So, the company should TAKE CASH DISCOUNT!**

3.4 Why there exists a trade-off between liquidity and profitability in current asset investment policy? And under which condition should the company emphasize on liquidity or profitability? **(10 Points)**

**ANSWER**

<b>Key focus</b>	<b>CA Investment Policy</b>	<b>Financing Policy</b>
<b>Liquidity</b>	CA more, But less capital for long-term investment	Capital more, but more expensive
<b>Profitability</b>	Less money for profitable activity = LESS!	Higher cost of capital = LESS profitability!

**AND VICE VERSA**

**Question 4 (35 Points)**

Tony is 35 years of age and expects to work until the age of 60. He is considering to save \$8,000 every year with the Philo Life Insurance Company, starting from the end of his 35 years old. Assume the approximate rate of return is 8%.

4.1 Please draw an investment time line of Tony's investment plan. What will be the amount Tony must have available at retirement? **(10 Points)**

**ANSWER**

<b>N</b>	<b>I/Y</b>	<b>PV</b>	<b>PMT</b>	<b>FV</b>
<b>25</b>	<b>8%</b>	<b>0</b>	<b>8,000</b>	<b>?</b>

**FV = 584,847.5196**

4.2 After careful consideration, Tony realizes that he could save \$2,000 more for 10 consecutive years in the investment plan. Assuming 8% rate of return, would you recommend Tony to save in the first 10 years or the last 10 years? Show your calculation to support the suggestion. **(15 Points)**

**ANSWER**

**The first 10 years: => FV = 676,755.1724**

N	I/Y	PV	PMT	FV	FV+15
10	8%	0	10,000	<u>144,865.6247</u>	<u>459,538.261</u>

N	I/Y	PV	PMT	FV	
15	8%	0	8,000	<u>217,216.9114</u>	

**The last 10 years => FV = 613,820.6445**

N	I/Y	PV	PMT	FV	
25	8%	0	8,000	<u>584,847.5196</u>	

N	I/Y	PV	PMT	FV	
10	8%	0	2,000	<u>28,973.1249</u>	

4.3 Tony expects to live for more 12 years after retirement. Suppose his saving plan yields 10% of return for the period after retirement. How much could Tony spend each year given the total amount at retirement from (4.1)? **(10 Points)**

**ANSWER**

N	I/Y	PV	PMT	FV
12	10	<u>584,847.5196</u>	?	0

**PMT = 85,834.16**

**Part 6:****Question 1 (20 Points)**

The following financial statements are from the 2019 Annual Report of the MWH Company.

1.1 According to the following information, identify key accounting entry whether it is source of cash inflow or source of cash outflow, and by how much. (10 Points)

**Balance Sheets at December 31, 2018 and 2019 (Unit: \$Million)**

	2018	2019	Cash Inflow	Cash Outflow
<b>Assets</b>				
Cash	\$50	\$60		
Accounts receivable	500	520		<b>20</b>
Inventory	750	770		<b>20</b>
<b>Current assets</b>	<b>\$1,300</b>	<b>\$1,350</b>		
Fixed assets (net)	\$500	\$550		
<b>Total assets</b>	<b>\$1,800</b>	<b>\$1,900</b>		
<b>Liabilities and equity</b>				
Notes payable to banks	\$100	\$75		<b>25</b>
Accounts payable	590.00	615.00	<b>25</b>	
Interest payable	10.00	20.00	<b>10</b>	
<b>Current liabilities</b>	<b>\$700</b>	<b>\$710</b>		
Long-term debt	300.00	350.00	<b>50</b>	
Deferred income tax	300.00	310.00	<b>10</b>	
Capital stock	400.00	400.00		
Retained earnings	100.00	130.00		
<b>Total liabilities &amp; equity</b>	<b>\$1,800</b>	<b>\$1,900</b>		

1.2 The company had capital expenditures (or cash flow from investing activities) \$150 million and paid out dividends \$30 million. Given the following Income Statement, summarize cash flow position of MWH Company for the year ended 2019 in the table below. **(10 Points)**

**Income Statement for Year Ended December 31, 2019 (Unit: \$Million)**

<b>Sales</b>	<b>1,000</b>
Cost of goods sold	-650
Depreciation expense	-100
Sales and general expense	-100
Interest expense	-50
Income tax expense	-40
<b>Net income</b>	<b><u>60</u></b>

<i>Items</i>	<i>Cash inflow / outflow</i>
<b><i>Cash Flow from Operations:</i></b>	
<b>Net Income</b>	<b>60</b>
<b>Depreciation</b>	<b>100</b>
<b>Deferred taxes</b>	<b>10</b>
<b>A/R</b>	<b>-20</b>
<b>Inventory</b>	<b>-20</b>
<b>Interest payable</b>	<b>10</b>
<b>A/P</b>	<b>25</b>
<i>Net Cash Inflow or Outflow</i>	<b><u>165</u></b>
<b><i>Cash Flow from Investments:</i></b>	
Capital Expenditures	<b><u>-150</u></b>
<b><i>Cash flow from financing activities:</i></b>	
Dividends	<b>-30</b>
<b>ST Debt repayment</b>	<b>-25</b>
<b>LT Debt borrowing</b>	<b>50</b>
<i>Net Cash Inflow or Outflow</i>	<b><u>-5</u></b>
<b>Change in Cash</b>	<b><u>10</u></b>

**Question 2 (25 Points)**

Bualuang Securities summarized key financial statements for the year ended December 31, 2015 of the two key players in the Aviation industry, which are Bangkok Airways (BA) and Asia Aviation (AAV). Income Statement and Balance Sheet were reported as follows:

**Income Statement**

<b>(Unit: Million Baht)</b>	<b>BA: 2015</b>	<b>AAV: 2015</b>
Revenue	23,113	29,507
Cost of sales and services or COGS	-18,626	-25,315
Selling, general, and administrative expenses	-2,967	-2,377
<b>EBIT</b>	<b>1,520</b>	<b>1,815</b>
Interest Expense	-1,606	-457
Other income or expense	1,458	956
<b>EBT</b>	<b>1,372</b>	<b>2,314</b>
Corporate tax	-250	-151
<b>Net profit (loss)</b>	<b>1,122</b>	<b>2,163</b>

**Balance Sheet**

<b>(Unit: Million Baht)</b>	<b>BA: 2015</b>	<b>AAV: 2015</b>
Cash & Equivalent	4,628	6,123
Accounts receivable	1,847	439
Inventory	306	94
Net fixed assets	9,559	18,216
Other fixed assets	40,673	27,955
<b>Total assets</b>	<b>57,013</b>	<b>52,827</b>
Account payable	2,261	336
Short-term debt	500	1,261
Long-term debt	13,858	12,775
Other long-term liabilities	9,438	18,313
<b>Total liabilities</b>	<b>26,057</b>	<b>32,685</b>
Paid-up capital	2,100	485
Common stock	28,425	2,599
Retained earnings	431	17,058
<b>Shareholders' equity</b>	<b>30,956</b>	<b>20,142</b>
<b>Total Shareholders' Equity &amp; Liabilities</b>	<b>57,013</b>	<b>52,827</b>

2.1 Use the preceding financial statements of AAV to compute key financial ratios by completing the following table. (10 Points)

<b>Ratio <sup>a</sup></b>	<b>BA: 2015</b>	<b>AAV: 2015</b>
Current ratio	2.46	<u>4.17</u>
Quick ratio	2.35	<u>4.11</u>
Inventory turnover	60.87	<u>269.31</u>
Average collection period	28.77	<u>5.36</u>
Debt ratio	45.70%	<u>61.87%</u>
Time interest earned ratio	0.946	<u>3.972</u>
Gross profit margin	19.41%	<u>14.21%</u>
Net profit margin	4.85%	<u>7.33%</u>
Return on total assets	1.97%	<u>4.09%</u>
Return on common equity	3.62%	<u>10.74%</u>

<sup>a</sup> Based on a 360-day year.

2.2 Summarize overall financial performance of AAV comparing with BA under each criterion. If you want to invest either in AAV or BA, which company would you recommend? (15 Points)

**ANSWER**

- **Liquidity**                      **AAV better**
- **Activity**                              **AAV better**
- **Leverage**                              **AAV better**
- **Profitability**                      **AAV better (except gross profit margin)**
- **Overall**                              **AAV better**

**Question 3 (40 Points)**

Linda Manufacturing has an inventory conversion period of 60 days, an average collection period of 30 days, and an account payable period of 45 days. Linda's annual sales are \$4,860,000 which are all on credit, and the gross profit margin is 20% of sales. Assume a 360-day year.

3.1 Calculate the company's cash conversion cycle and the amount of resources needed to support the cash conversion cycle. **(10 Points)**

**ANSWER**

Cash conversion cycle =  $60 + 30 - 45 =$  45 days

Inv investment	648,000.00
AR investment	405,000.00
AP investment	- 486,000.00
<u>Min Cash required</u>	<u>567,000.00</u>

3.2 Assume that inventory of the company was transacted with the credit terms of **1/15, net 45**. Linda understands that if they do not take cash discount, there should be no cost associated. Is Linda's understanding correct? Why? If there is cost, how great is the percentage? **(10 Points)**

**ANSWER**

No, Linda's understanding is wrong. There is an opportunity cost of foregoing cash discount.

$$OppCost = \frac{1}{99} \times \frac{360}{30} = 12.12\%$$

3.3 Linda would like to borrow short-term loan for 40 days and rolls over its contract throughout the year. Suppose that the bank offers Linda short-term debt with term loan of 40 days and 15% of interest rate per annum. By comparing the opportunity cost of foregoing a cash discount and the actual cost of bank loan, would you recommend the company to take cash discount? Why? **(10 Points)**

**ANSWER**

**NOT TAKE:**  $OppCost = \frac{1}{99} \times \frac{360}{30} = 12.12\%$

**TAKE:**  $ActualRate = \left(1 + \frac{15\%}{9}\right)^9 - 1 = 16.04\%$

3.4 In financing policy, explain possible reason why there exists a trade-off between liquidity and profitability. Under which condition should the company emphasize on a particular aspect (i.e. liquidity or profitability)? **(10 Points)**

**ANSWER**

- Cost of long-term debt > cost of short-term debt
- If conservative:
  - Focus on liquidity => having more long-term debt
  - => higher financing cost
  - => lower profitability
- If aggressive:
  - Focus on profitability
  - => having more short-term debt due to lower financing cost
  - => less long-term debt
  - => lower liquidity

**Question 4 (35 Points)**

Tony is 38 years old and expects to retire at the age of 65. He wishes to provide saving for himself and is considering an annuity contract with the Philo Life Insurance Company. Such a contract pays him an equal-dollar amount each year that he lives after retirement. According to actuarial tables, his life expectancy after retirement is 15 years, and that is the duration on which the insurance company bases its calculations regardless of how long he actually lives.

4.1 If Philo Life uses a compound annual interest rate of 5 percent in its calculations, what must be the insurance cost when Tony retires in order to provide him an annuity amount of \$15,000 per year? **(10 Points)**

**ANSWER**

<b>N</b>	<b>I/Y</b>	<b>PV</b>	<b>PMT</b>	<b>FV</b>
<b><u>15</u></b>	<b><u>5%</u></b>	<b><u>?</u></b>	<b><u>15,000</u></b>	<b><u>0</u></b>

**PV = 155,694.87**

4.2 If Tony wants to pay the insurance cost as an annuity payment at the end of the year for the rest of his working period, how much does he have to pay? Assume a compound annual interest rate of 5 percent. **(10 Points)**

**ANSWER**

Tony is now 38 years old (= year 37 in the investment timeline). Assuming he would make payment at the end of the year, there are thus  $65-37 = 28$  years left from now.

<b>N</b>	<b>I/Y</b>	<b>PV</b>	<b>PMT</b>	<b>FV</b>
<b><u>28</u></b>	<b><u>5%</u></b>	<b><u>0</u></b>	<b><u>?</u></b>	<b><u>155,694.87</u></b>

**PMT = 2,665.89**

4.3 Tony realizes that he has another possible investment plan, which is the Retirement Mutual Fund (RMF). This option yields only 3% return, but requires him to save \$7,000 each year for the rest of his working period. If he chooses this plan, how much will he have at the retirement year? Is it better than saving with Philo Life? Why? **(15 Points)**

**ANSWER**

<b>N</b>	<b>I/Y</b>	<b>PV</b>	<b>PMT</b>	<b>FV</b>
<b><u>28</u></b>	<b><u>3%</u></b>	<b><u>0</u></b>	<b><u>7,000</u></b>	<b><u>?</u></b>

**FV at 65 = 300,516.46.**

**So, this plan is better.**