# Midterm Exam Answer

Financial Management (1510 & 1511, Fall 2017)
National Chiao Tung University

**Part I** (50 points; 2 points each)

| | |
|---|---|
| 1. | A |
| 2. | A |
| 3. | D |
| 4. | A |
| 5. | C |
| 6. | C |
| 7. | B |
| 8. | D |
| 9. | D |
| 10. | E |
| 11. | D |
| 12. | A |
| 13. | E |
| 14. | C |
| 15. | B |
| 16. | E |
| 17. | E |
| 18. | C |
| 19. | B |
| 20. | E |
| 21. | B |
| 22. | B |
| 23. | C |
| 24. | A |
| 25. | D |

**Part II** (50 points)

**1.** (5 points)

$0.20 \times \$65{,}000 = (0.16 \times \$50{,}000) + [X \times (\$65{,}000 - 50{,}000)]$

$\$13{,}000 = \$8{,}000 + \$15{,}000X$

$X = 0.33$, or 33%

**2.** (5 points)

ROA = (sales/assets) × operating profit margin

$0.10 = (\$4{,}000{,}000/\text{assets}) \times 0.05$

Assets = \$2,000,000

$0.12 = (\$4{,}000{,}000/\text{assets}) \times 0.05$

Assets = \$1,666,667

Reduction in assets = \$2,000,000 – 1,666,667 = \$333,333

**3.** (5 points)

Equity = assets – liabilities = \$1,000 – 350 = \$650

Long-term debt ratio = long-term debt / (long-term debt + equity)

Long-term debt ratio = (\$350 - 130)/[(\$350 - 130) + \$650]

Long-term debt ratio = 0.25

**4.** (6 points)

After-tax operating income = Net income + Interest × (1 – Tax rate) = EBIT - Tax

$$\text{EBIT} = \frac{\text{Net Income}}{.65} + \text{Interest}$$

$$= \frac{\$1.95\text{ million}}{.65} + \$400{,}000$$

$$= \$3.4\text{ million}$$

$$\text{ROE} = \left(\frac{\text{assets}}{\text{equity}}\right) \text{x} \frac{\text{sales}}{\text{assets}} \text{x} \left(\frac{\text{EBIT - tax}}{\text{sales}}\right) \text{x} \left(\frac{\text{EBIT - tax - interest}}{\text{EBIT - tax}}\right)$$

$$= \left(\frac{\$14\text{ million}}{\$7\text{ million}}\right) \text{x} \left(\frac{2 \times \$14\text{ million}}{\$14\text{ million}}\right) \text{x} \left(\frac{\$3.4\text{ million} - \$1.05\text{ million}}{\$28\text{ million}}\right) \text{x} \left(\frac{\$1.95\text{ million}}{\$2.35\text{ million}}\right)$$

$$= 2 \times 2 \times .0839 \times .8298$$

$$= 27.85\%$$

**5.** (5 points)

If ROA equals the industry average but ROE exceeds the industry average, the firm must have **above-average leverage**. As long as ROA exceeds the borrowing rate, leverage will increase ROE.

**6.** (6 points)

Down payment needed = ($20,000 × 1.04) × 0.2 = $4,160

$PV = FV/(1 + r)^t$

PV = $4,160/(1.06)

PV = $3,924.53

**7.** (6 points)

Monthly interest rate = 0.06/12 = 0.005

$PV = \$2,500 \{(1/0.005) - [1/.005(1.005)^{12 \times 25}]\}$

PV = $388,017.16

**8.** (6 points)

$Price = (0.07 \times \$1,000) \{(1/0.10) - [1/0.10(1.10)^3]\} + \$1,000/1.10^3$

Price = $925.39

**9.** (6 points)

Total return = [$1,085 + (0.09 × $1,000) - $1,100]/$1,100 = 0.0682, or 6.82%