

Q1. Part 1:

a) Return on Common Equity =  $\frac{\text{Net income to common stockholders}}{\text{Average common equity}} = \frac{\$450}{\$500} = 0.9$   
 ↳ (Page 46) 5/25 or 90%

b) Current assets? Current ratio =  $\frac{\text{Current assets}}{\text{Current liabilities}} \Rightarrow 3.5 = \frac{\text{Current assets}}{\$158}$   
 ↳ (P. 43)  $\Rightarrow \text{Current assets} = 3.5 \times \$158 = \$553$  5/25

c) Quick (Acid-Test) Ratio =  $\frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}} = \frac{\$553 - \$280}{\$158} = 1.728$   
5/25 ≈ 1.43

d) Receivables = ? DOS =  $\frac{\text{Receivables}}{\text{Annual sales}/365} \Rightarrow 40 \text{ days} = \frac{\text{Receivables}}{\$1800/365 \text{ da}}$   
 $\Rightarrow \text{Receivables} = 40 \text{ days} \times \frac{\$1800}{365 \text{ days}} = \$197.26$  5/25

Part 2:

b) is correct. Investors look at the Price to earning ratio.

P/E ratio =  $\frac{\text{Price per share}}{\text{Earning per share}} = \frac{\$85}{\$8} = 10.625$

5/25

Q2, Selecting  $n=0$  as the base period;

Extra info:

Relationship between present value & Future value.

$$\underline{(P/F, i, N) = 1 - (P/A, i, N) i}$$

We have an equal series of \$100 from year 1 to 5 and extra \$50 for year 1 & 4, and one \$100 for year 5, so:

For cash flow 1:

$$\begin{aligned} P_1 &= \$200 + \$100(P/A, 6\%, 5) + \$50(P/F, 6\%, 1) + \$50(P/F, 6\%, 4) \\ &\quad + \$100(P/F, 6\%, 5) \\ &= \$200 + \$100(4.2124) + \$50(0.9434) + \$50(0.7921) + \$100(0.7473) \\ &= 782.75 \end{aligned}$$

15/25

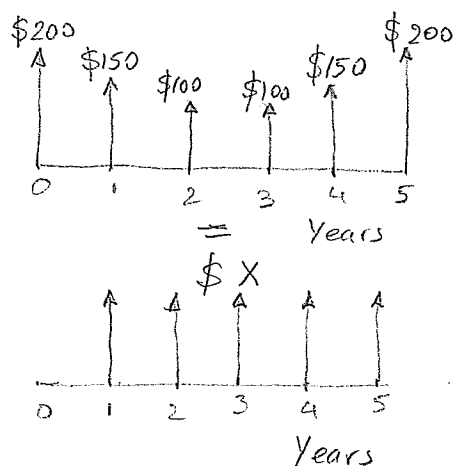
For cash flow 2:

$$P_2 = X(P/A, 6\%, 5) = 4.2124 X$$

10/25

$$P_1 = P_2 \Rightarrow 782.75 = 4.2124 X \Rightarrow X = \underline{\underline{\$185.82}}$$

Ans



Q3 - Given:

$r_1 = 6\%$  Compounded Quarterly  $\Rightarrow i_1 = 1.5\%$

$r_2 = 10\%$  " "  $\Rightarrow i_2 = 2.5\%$

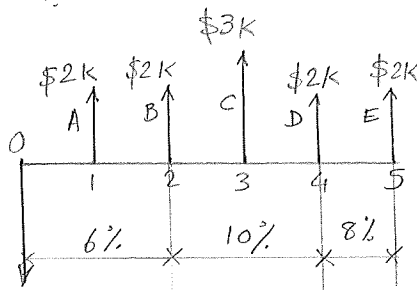
$r_3 = 8\%$  " "  $\Rightarrow i_3 = 2\%$

Find: a)  $P = ?$

b) Single payment  $F = ?$  @  $n=5$

c) equal " Series A from  $n=1$  to  $n=5 = ?$

for 4 quarters in one year



a)  $P = \underbrace{\$2,000 (P/F, 1.5\%, 4)}_{\text{For A}} + \underbrace{\$2,000 (P/F, 1.5\%, 8)}_{\text{For B}} + \underbrace{\$3,000 (P/F, 2.5\%, 4)(P/F, 1.5\%, 8)}_{\text{For C}}$

$+ \underbrace{\$2,000 (P/F, 2.5\%, 8)(P/F, 1.5\%, 8)}_{\text{For D}} + \underbrace{\$2,000 (P/F, 2\%, 4)(P/F, 2.5\%, 8)(P/F, 1.5\%, 8)}_{\text{For E}}$

$= 2000(0.9422) + 2000(0.8877) + 3000(1+0.025)^{-4}(0.8877) + 2000(1+0.025)^{-8}(0.8877)$   
 $+ 2000(0.9238)(1+0.025)^{-8}(0.8877)$   
 $= 1,884.4 + 1,775.4 + 2,412.77 + 1,457.07 + 1,346.04 = \underline{\$8,875.68}$  10/25  
 Ans. a

b)  $F = P(F/P, 1.5\%, 8)(F/P, 2.5\%, 8)(F/P, 2\%, 4)$

$= \$8,875.68(1.1265)(1+0.025)^8(1.0824) = \underline{\$13,185.92} \approx \underline{\$13,186}$  5/25  
 Ans. b

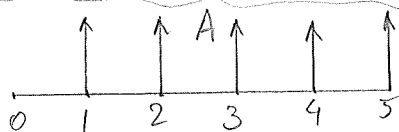
c) Calculating  $F$  at  $n=5$  & find  $A = ?$

$F = A + A(F/P, 2\%, 4) + A(F/P, 2.5\%, 4)(F/P, 2\%, 4) + A(F/P, 2.5\%, 8)(F/P, 2\%, 4)$   
 for  $n=5$        $\hookrightarrow$  for  $n=4$        $\hookrightarrow$  for  $n=3$        $\hookrightarrow$  for  $n=2$

$+ A(F/P, 1.5\%, 4)(F/P, 2.5\%, 8)(F/P, 2\%, 4)$   
 $F = A + A(1.0824) + A(1.025)^4(1.0824) + A(1.025)^8(1.0824) + A(1.0614)(1.025)^8(1.0824)$   
 $\hookrightarrow 1.10381$        $\hookrightarrow 1.19476$

$= A(1 + 1.0824 + 1.19476 + 1.3188 + 1.3998) = 5.9958A$  10/25

$F = \$13,186 = 5.9958A \Rightarrow A = \frac{\$13,186}{5.9958} = \underline{\$2,199.21}$   
 Ans. c



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- Q4- Given: Estimate & remaining service life = 25 years  
 Current rental income = \$150,000 per year.  
 O & M costs = \$45,000, for the 1st year increasing by \$3,000, year after  
 Salvage Value = \$50,000  
 MARR = 12%

If  $P_0$  be the maximum investment required to break even then:

$$\begin{aligned}
 PW(12\%) = & -P_0 + [\$150,000(F/A, 12\%, 25) + \$15,000(F/A, 12\%, 20) \\
 & + \$16,500(F/A, 12\%, 15) + \$18,150(F/A, 12\%, 10) \\
 & + \$19,965(F/A, 12\%, 5) + \$50,000](P/F, 12\%, 25) \\
 & - \$45,000(P/A, 12\%, 25) - \$3,000(P/G, 12\%, 25) \\
 = & 0.
 \end{aligned}$$

By using page 919 for 12% as the interest table we have:

$$\begin{aligned}
 -P_0 + [\$150,000(133.3339) + \$15,000(72.0524) + \$16,500(37.2797) \\
 + \$18,150(17.5487) + \$19,965(6.3528) + \$50,000](0.0588) \\
 - \$45,000(7.8431) - \$3,000(53.1046) = 0
 \end{aligned}$$

$$\Rightarrow P_0 = \$1,304,850.122 - \$512,253.297 = \$792,596.83$$

$$P_0 = \$792,596.83$$

