

**A. MULTIPLE CHOICE QUESTIONS (30%)**

1	A
2	C
3	B
4	C
5	C
6	C
7	D
8	D
9	C
10	C

11	C
12	D
13	C
14	D
15	C
16	B
17	D
18	B
19	B
20	D

**B. Exercises**

**Exercise # 1 (20%)**

(a)

Sales	\$500,000
Less: Variable costs	<u>275,000</u>
CM	\$225,000
Less: Fixed costs	<u>135,000</u>
Net income	\$ 90,000
Less: Income taxes	<u>36,000</u>
Projected 19A's after-tax income	<u>\$ 54,000</u>

(b) Break-even sales in units =  $\frac{\$135,000}{\$25 - \$13.75} = 12,000$  units

(c) After-tax net income for 19B = (Sales- Variable costs- Fixed costs) X (1 - Tax rate)  
 = (\$550,000 - \$302,500- \$146,250) (1 - 0.4) = \$60,750

(d) Break-even sales in dollars =  $\frac{\$146,250}{1 - (\$13.75/\$25.00)} = \frac{\$146,250}{0.45} = \$325,000$

(e) Required 19B sales level =  $\frac{\$146,250 + [\$54,000/(1 - 0.4)]}{0.45} = \frac{\$236,250}{0.45} = \$525,000$

(f) Let x = maximum advertising. Then

December Exam 2020 KEY

Sales	\$550,000 (22,000 @\$25)
Less: Variable costs	<u>302,500 (@\$13.75)</u>
CM	\$247,500
Less: Fixed costs	<u>135,000</u>
Advertising	X
Net income before tax*	<u>\$100,000</u>

\*\$100,000 = \$60,000/(1 - 0.4).

x is calculated as \$12,500.

**Exercise # 2 (15%)**

Year	Cash Inflow,	Cash Outflow,
1	\$800,000	\$550,000
2	\$790,000	\$590,000
3	\$920,000	\$600,000
4	\$870,000	\$610,000
5	\$650,000	\$390,000

Net cash flow after taxes calculation

Year	Cash Inflow, (1)	Cash Outflow, (2)	Net Cash Flow Before Taxes, (3) = (1) - (2)	Depreciation (Noncash Expense) (4) = 0.2 X, 800,000	Net Income Before Taxes, (5) = (3) - (4)	Income Taxes (6) = 0.4 X, (5)	Net Income After Taxes, (7) = (5) - (6)	Net Cash Flow After Taxes, (8) = (3) - (6) or (7) + (4)
1	\$800,000	\$550,000	\$250,000	\$160,000	\$ 90,000	\$36,000	\$54,000	\$214,000
2	\$790,000	\$590,000	\$200,000	\$160,000	\$ 40,000	\$16,000	\$24,000	\$184,000
3	\$920,000	\$600,000	\$320,000	\$160,000	\$160,000	\$64,000	\$96,000	\$256,000
4	\$870,000	\$610,000	\$260,000	\$160,000	\$100,000	\$40,000	\$60,000	\$220,000
5	\$650,000	\$390,000	\$260,000	\$160,000	\$100,000	\$40,000	\$60,000	\$220,000

The Net Present Value (NPV) is computed as follows:

Year	Net Cash Flow After Taxes,	10% PV Table Value,	Present Value,
0	\$(800,000)	1.000	\$(800,000)
1	\$214,000	0.909	\$194,526
2	\$184,000	0.826	\$151,984
3	\$256,000	0.751	\$192,256
4	\$220,000	0.683	\$150,260
5	\$220,000	0.621	\$136,620
		NPV	<u>\$ 25,646</u>

The company should buy the machine, since NPV is positive (\$25,646).

**Exercise # 3 (10%)**

1.

Cost of Goods Sold	
Beginning Inventory	\$ 400,000
Purchases	1,900,000
Cost of Goods Available	<u>\$2,300,000</u>
Ending Inventory	<u>500,000</u>
Cost of Goods Sold	<u>\$1,800,000</u>

$$\text{Average inventory} = \frac{\text{Beginning inventory} + \text{Ending inventory}}{2} = \frac{\$400,000 + \$500,000}{2} = \$450,000$$

$$\text{Inventory turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average inventory}} = \frac{\$1,800,000}{\$450,000} = 4$$

$$\text{Age of inventory} = \frac{365 \text{ days}}{\text{Inventory turnover}} = \frac{365 \text{ days}}{4} = 91.3 \text{ days}$$

2. River Company's inventory management improved in 19D, as evidenced by the higher turnover rate and decrease in the days that inventories were held. As a result, there is less liquidity risk. Further, the company's profitability will benefit by the increased turnover of merchandise.

**Exercise # 4 (18%)**

**Required:**

**1. Compute the return on total assets.**

Return on total assets =

$$\frac{\text{Net income} + [\text{Interest expenses} \times (1 - \text{Tax rate})]}{\text{Average total assets}} = \frac{\$672 + [\$0 \times (1 - 0.36)]}{(\$5,344 + \$4,429) / 2} = 13.8\% \text{ (rounded)}$$

**2. Compute the return on common stockholders' equity.**

Return on a common stockholders' equity =

$$\frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common stockholders' equity}} = \frac{\$672 - \$0}{(\$2,284 + \$2,228) / 2} = 29.8\% \text{ (rounded)}$$

**3. Compute the current ratio.**

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}} = \frac{\$1,696}{\$2,156} = 0.79 \text{ (rounded)}$$

**4. Compute the acid-test ratio.**

Acid-test ratio =

$$\frac{\text{Cash} + \text{Marketable securities} + \text{Accounts receivable} + \text{Short-term notes receivable}}{\text{Current liabilities}} =$$

$$\frac{\$281 + \$157 + \$288 + \$0}{\$2,156} = 0.34 \text{ (rounded)}$$

**5. Compute the average sale period.**

$$\text{Average sale period} = \frac{365 \text{ days}}{\text{Inventory turnover}} = \frac{365 \text{ days}}{6.02} = 61 \text{ days (rounded)}$$

**6. Compute the debt-to-equity ratio.**

$$\text{Debt-to-equity ratio} = \frac{\text{Total liabilities}}{\text{Stockholders' equity}} = \frac{\$2,156 + \$904}{\$2,284} = 1.34 \text{ (rounded)}$$

**Exercise # 5 (7%)**

**What is the WACC of Stability?**

$$\begin{aligned} \text{WACC} &= (10,000,000/25,000,000)*8\% + (10,000,000/25,000,000)*18\% + (5,000,000/25,000,000)*15\% \\ &= 3.2\% + 7.2 + 3 = 13.4\% \end{aligned}$$

***Good Work!!***