King Saud University

College of Science

Department of Mathematics

Midterm Examination

ACTU 262 Actuarial Corporate Finance

26/10/2023 G Duration 1H:30

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Name: Model Answers
Sequence Number:
Section:

Note: The exam consists of 6 pages

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Exercise 1: MCQ	**5**
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Exercise 1. [5]

1) **Which of the following is an index of the liquidity of a business?**
   a) Current ratio
   b) Profitability Ratio
   c) Debt to asset ratio
   d) Asset turnover ratio

1

2) **The DuPont Analysis uses the following ratios except:**
   a) Debt ratio.
   b) Profit margin.
   c) Total asset turnover.
   d) Financial leverage.

1

3) **What does the accounts receivable turnover ratio tell us**
   a) How often account receivable received.
   b) How many time account receivables is collected.
   c) Account receivable balance at the end of the period.
   d) Bad debt balance at the year end.

1

4) **DJ, Inc., has net working capital of $3,810, current liabilities of $5,600, and inventory of $4,840. What is the quick ratio?**

   a) .82 times
   b) 0.99 times
   c) 0.87times
   d) 0.85 times

1

5) **Ratios that measure a firm's financial leverage are known as ………… Ratios.**
   a) asset management
   b) long-term solvency
   c) short-term solvency
   d) profitability

1

Exercise 2. [3]

The Blue Moon Corporation has ending inventory of $407,534, and cost of goods sold for the year just ended was $4,105,612. What is the inventory turnover? The days' sales in inventory? How long on average did a unit of inventory sit on the shelf before it was sold?

ANSWER

Inventory turnover= 4105612/407534 = 10.07 times 1

Days sales in inventory= 365/10.07 = 36.24 times 1

Inventory sets an average of 36 days before it is sold 1

Exercise 3. [3]

A corporation has a profit margin of 6.80 percent, total asset turnover of 1.95, and ROE of 18.27 percent. By using Du Pont Identity, find the firm's debt–equity ratio?

ANSWER

ROE= net income/total equity= 18.27%

Du Pont Identity= profit margin x total asset turnover x equity multiplier 1

Then

18.27%=6.8% x 1.95 x equity multiplier

Then equity multiplier= 1.377828 1

equity multiplier = 1+ debt equity ratio

so debt equity ratio = 0.377828 1

Exercise 4. [4]

The most recent financial statements for GPS, Inc., are shown here:

Income Statement		Balance Sheet			
Sales	$19,500	Assets	$98,000	Debt	$52,500
Costs	15,000			Equity	45,500
Taxable income	$ 4,500	Total	$98,000	Total	$98,000
Taxes (40%)	1,800				
Net income	$ 2,700				

Assets and costs are proportional to sales. Debt and equity are not. A dividend of $1,400 was paid, and the company wishes to maintain a constant payout ratio. Next year's sales are projected to be $21,840. What is the external financing needed?

ANSWER

Growth rate=(21840-19500)/19500 = 12%

Proforma income statement

Sales	21840
Cost(76.92%)	16800
Taxable income	5040
Taxes(40%)	2016
Net income	3024
Dividends	1568
ARE	1456

1

Proforma Balance sheet

Asset 109760	Debt 52500
	equity 46956
Total 109760	Total 99456

Div payment ratio= 1400/2700 = 14/27

Retention ratio = 1-(14/27)= 13/27

Where ARE= Retention ratio x net income

Dividend = payout ratio x net income

New equity=45500+1456=46956

Then EFN= 109760-99456= 10304

Exercise 5. [5]

Consider the following income statement for the Heir Jordan Corporation:

HEIR JORDAN CORPORATION Income Statement		
Sales		$38,000
Costs		18,400
Taxable income		$19,600
Taxes (34%)		6,664
Net income		$12,936
Dividends	$5,200	
Addition to retained earnings	7,736	

1) A 20 percent growth rate in sales is projected. Prepare a pro forma income statement assuming costs vary with sales and the dividend payout ratio is constant. What is the projected addition to retained earnings?

Answer

Proforma income statement

Sales 45600

Costs 22080

Taxable income 23520

Taxes(34%) 7996.8

Net income 15523.2

Dividend 6240

ARE 9283.2

1

Retention ratio 1- Dividend payout ratio

Div payout ratio= 650/1617

Retention ratio= 967/1617

Dividendes=net income x Div payout ratio = 6240

ARE=net incomes x retention ratio

ARE=9283.2

2) The balance sheet for the Heir Jordan Corporation follows. Based on this information and the income statement in the previous question, prepare a pro forma balance sheet showing EFN, assuming a 20 percent increase in sales, no new external debt or equity financing, and a constant payout ratio, accounts payable vary with sales, whereas notes payable do not.

HEIR JORDAN CORPORATION
Balance Sheet

Assets			**Liabilities and Owners' Equity**		
	$	**Percentage of Sales**		**$**	**Percentage of Sales**
Current assets			Current liabilities		
Cash	$ 3,050	—	Accounts payable	$ 1,300	—
Accounts receivable	6,900	—	Notes payable	6,800	—
Inventory	7,600	—	Total	$ 8,100	—
Total	$17,550	—	Long-term debt	$25,000	—
Fixed assets					
Net plant and equipment	$34,500	—	Owners' equity		—
			Common stock and paid-in surplus	$15,000	
			Retained earnings	3,950	—
			Total	$18,950	—
Total assets	$52,050	—	Total liabilities and owners' equity	$52,050	—

Answer

Proforma balance sheet

Asset			Liabilities and Equity		
	$	Percentage in sales		$	Percentage in sale
cash	3660	8.026%	Account payable	1560	3.42%
Account receivable	8280	18.157%	Notes payable	6800	NA
inventory	9120	20%	total	8360	NA
Total	21060		Long term debt	25000	NA
Fixed asset And equipment	41400	90.789%	Owner Equity		
			Common stock and paid in surplus	15000	NA
			Received earnings	13233.2	NA
			total	28233.2	NA
Total Asset		62460	Total Liability and owner equity		61593.2

1

New retained earning=AER+ retain earning previous= 3950+9283.2

ENF= 62460-61593.2= 866.8 1

3) What growth rate can Heir Jordan achieve if no external financing is used? What is the sustainable growth rate?

Answer:

first- growth rate with no external financing need is

Internal growth rate= ROA x b /(1-ROAx b)

ROA=net income/total asset=12936/52050 = 24.853%

. b= retention ratio=967/1617.

Internal growth rate 17.45723%. 1

Second- A sustainable growth rate is a growth rate where a company keeps the debt-equity ratio constant and does not use equity to finance.

sustainable growth rate= b x ROE /(1-b x ROE) = 68.98519%. 1

ROE= 68.2638%.

B= 967/1617

4) Based on the previous information, what is EFN, assuming 60 percent capacity usage for net fixed assets?

Answer

Full capacity sales= 38000/60% = 63 333.33

Full capacity > external sales=45600

No need for new fixed asset => net fixed asset=34500

New fixed assets: -345000+ 41400= 6900

New EFN= EFN-6900=-6033.2 (surplus) 2