FIN 3210 Fall 2015 Exam 3 Name Answer Key

NOTE: Type your name in cell G1

Multiple Choice

1	**C**	0
2	**A**	0
3	**A**	0
4	**C**	0
5	**A**	0
6	**C**	0
7	**B**	0
8	**E**	0
9	**D**	0
10	**C**	0
11	**B**	0
12	**C**	0
13	**D**	0
14	**C**	0
15	**D**	0
16	**B**	0
17	**B**	0
18	**E**	0
19	**E**	0
20	**D**	0
		0

Answer Key

Problem #1 (11 points)

You are considering a new product launch. The plant and equipment will cost $650,000, have a four year life, and be depreciated on a straightline basis to zero salvage value. Sales are projected at 150 units per year, price per unit will be $18,000, variable cost per unit will be $13,000, and fixed costs will be $450,000 per year. The project will require an investment in inventory of $150,000 to be returned at the end of the project. The require return on the project is 15% and the tax rate is 30%. Based on your knowledge, you feel that the price, variable costs, fixed costs and quantity are accurate to within +/- 10%. Fill in the table with the base case, best case and worst case values for the project. Also, calculate the payback period, NPV and IRR for the best-case and worst-case scenarios.

Equipment	$	650,000
Project life (years)		4
Units per year		150
Price per unit	$	18,000
Variable cost per unit	$	13,000
Fixed costs	$	450,000
NWC	$	150,000
Required return		15%
Tax rate		30%
Uncertainty		
Price		10%
Units per year		10%
Variable cost		10%
Fixed cost		10%

	Base	Best	Worst
Quantity per year	150	165	135
Price/unit	$ 18,000.00	$ 19,800.00	$ 16,200.00
Variable costs/unit	$ 13,000.00	$ 11,700.00	$ 14,300.00
Fixed costs	$ 450,000	$ 405,000	$ 495,000

	Worst-case	Best-case
Sales	$ 2,187,000	$ 3,267,000
VC	1,930,500	1,930,500
Fixed costs	495,000	405,000
Depreciation	162,500	162,500
EBT	$ (401,000)	$ 769,000
Tax	(120,300)	230,700
NI	$ (280,700)	$ 538,300
+ Dep	162,500	162,500
OCF	$ (118,200)	$ 700,800

0	$ (800,000)	$ (800,000)
1	(118,200)	700,800
2	(118,200)	700,800
3	(118,200)	700,800
4	31,800	850,800

NPV	($1,051,695.46)	$1,286,531.82
IRR	#NUM!	80.82%
Payback period	Never	1.14 years

Answer Key

Problem #2 (11 points)

A three year project has an initial investment in plant and equipment of $375,000 which will be depreciated on a straight-line basis over the three year life of the project. The company will sell 110,000 units at a price of $26 each and a variable cost of $15. Fixed costs are $165,000, the tax rate is 34% and the cost of capital is 14%. How sensitive is NPV to changes in price?

Equipment	$	375,000
Project life (years)		3
Sales (units)		110,000
Price/unit	$	26
Variable cost/unit	$	15
Fixed costs	$	165,000
Tax rate		34%
Required return		14%

New price 30

Time 0:

Equipment	$	(375,000)
Total	$	(375,000)

		Base		New quantity
Sales	$	2,860,000	$	3,300,000
VC		1,650,000		1,650,000
Fixed costs		165,000		165,000
Depreciation		125,000		125,000
EBT	$	920,000	$	1,360,000
Tax		312,800		462,400
NI	$	607,200	$	897,600
+ Dep		125,000		125,000
OCF	$	732,200	$	1,022,600

0	$	(375,000)	$ (375,000)
1		732,200	1,022,600
2		732,200	1,022,600
3		732,200	1,022,600

NPV	$1,324,898.97	$1,999,100.91

Sensitivity **$ 168,550.49**

For dollar increase in price, NPV will decrease by $168,550.49 and for every dollar decrease in price NPV will inrease by $168,550.49.

Answer Key

Problem #3 (18 points)

Your company is considering a new project. The company has a plant available that it is currently not using. The plant was purchased for $1,800,000 four years ago, but could be sold for $1,900,000 after taxes today. In three years, the plant will be able to be sold for $1,850,000 after taxes. There is no depreciation on the plant. The equipment necessary for the project will cost $3.5 million and will be depreciated on a 3-year MACRS schedule. The equipment can be sold for $725,000 in 3 years. The sales projections for each year are $2.9 million, $4.8 million and $3.7 million, respectively, over the 3-year life of the project. Variable costs are 35 percent of sales, and fixed costs are $750,000 per year. The project will also require an investment of $125,000 in NWC which will be return at the end of the project. The company has a tax rate of 40 percent and the required return on the project is 13 percent. Calculate the payback period, profitability index, NPV, and IRR of the project. Should the company accept the project?

Original plant purchase price	$	1,800,000			
Current market value of plan	$	1,900,000			
Plant market value at end	$	1,950,000			
Equipment	$	3,500,000			
Depreciation			20.00%	32.00%	19.20%
Equipmenth salvage value	$	725,000			
Sales			$ 2,900,000	$ 4,800,000	$ 3,700,000
Variable costs		35%			
Fixed costs	$	750,000			
NWC	$	125,000			
Tax rate		40%			
Required return		13%			

Book value		$ 2,800,000	$ 1,680,000	$ 1,008,000

	Year 0	*Year 1*	*Year 2*	*Year 3*
Sales		$ 2,900,000	$ 4,800,000	$ 3,700,000
VC		1,015,000	1,680,000	1,295,000
FC		750,000	750,000	750,000
Depreciation		700,000	1,120,000	672,000
EBT		$ 435,000	$ 1,250,000	$ 983,000
Tax		174,000	500,000	393,200
Net income		$ 261,000	$ 750,000	$ 589,800
+Depreciation		700,000	1,120,000	672,000
OCF		$ 961,000	$ 1,870,000	$ 1,261,800
Equipment	$ (3,500,000)			$ 838,200
Plant	$ (1,900,000)			$ 1,950,000
NWC	(125,000)			125,000
Total cash flow	$ (5,525,000)	$ 961,000	$ 1,870,000	$ 4,175,000

Salvage		
Sell old	$	725,000
Taxes		113,200
Aftertax salvage value	$	838,200

NPV	($316,588.80)
IRR	10.25%
Payback period	2.65 years
PI	0.943