Homework 3A

Started: Feb 22 at 9:11pm

Quiz Instructions

General Policies

Every question in this part of the homework (part A - Questions) is assigned Zero Marks in canvas settings but each of them has its point-share mentioned at the end.
You'll see answers after the due date in part B - Self-assessment of the homework, and will be asked to self-assess deserving points for each answer with relevant justification. Later, self-assessments will be verified and uploaded as homework grades.

Please upload your excel workbook that you used to solve questions at the end**.**

All numerical answers should be submitted up to 2 decimal places.

While you may discuss the homework assignment with others enrolled in the course, you must write and submit your own solution. Copying the homework of someone else, or submitting work done by someone else is a **breach of academic integrity**.

Chapter 4 Questions:

Question 1 0 pts

Alternatives 1, 2, and 3 have lives of 3, 4, and 6 years, respectively. Their net cash flow (NCF) and salvage value (SV) profiles are as follows:

	Alternative 1		Alternative 2		Alternative 3	
EOY	NCF1	SV1	NCF2	SV2	NCF3	SV3
0	−$20,000	–	−$40,000	$40,000	−$70,000	$70,000
1	$8,000	–	$20,000	$30,000	$30,000	$50,000
2	$8,000	–	$20,000	$20,000	$30,000	$30,000
3	$28,000	–	$20,000	$10,000	$30,000	$20,000
4			$20,000	0	$30,000	$10,000
5					$30,000	$5,000
6					$30,000	$2,000

Additional explanation is necessary: the NCF profile of Alternative 1 that is shown above is the net result of a $20,000/year lease payment payable at the beginning of each year, plus an end-of-year net revenue of $28,000. This lease arrangement may be renewed in 3-year increments; however, premature cancellation of the lease results in a lease termination penalty (cost) of $10,000 at the time of cancellation. The NCFs of all other alternatives are expected to repeat indefinitely as shown.

a. If a least-common-multiple-of-lives approach is to be used, specify the planning horizon and the complete set of
cash flows for each alternative. (5points)

b. Repeat (a) using the shortest life approach. (5points)

c. Repeat (a) using the longest life approach. (5points)

d. Repeat (a) using a standard planning horizon of 2 years. (5points)

e. Repeat (a) using a standard planning horizon of 5 years. (5points)

For this question, you do not need to submit any answers here; your excel solution suffices (just check true).

○ True

○ False

Question 2 0 pts

Kooche Company plans to invest $1,000,000 in projects next year. $700,000 will be provided through debt capital with a before tax cost of 7.3%. The remaining $300,000 will be provided through equity capital at a cost of 6.5%. Kooche's corporate tax rate is 40%. What is the weighted average cost of capital? (Remember to include your work in the excel submission).

(5 points)

◉ 5.02

○ 7.06

○ 6.05

○
13.80

Chapters 5-6-7 Questions:

DelRay Foods must purchase a new gumdrop machine. Two machines are available. Machine 7745 has a first cost of $10,000, an estimated life of 10 years, a salvage value of $1,000, and annual operating costs estimated at $0.01 per 1,000 gumdrops. Machine A37Y has a first cost of $8,000, a life of 10 years, and no salvage value. Its annual operating costs will be $300 regardless of the number of gumdrops produced. MARR is 6 percent/year, and 30 million gumdrops are produced each year.

Answer the following questions 3 questions.

Question 3 0 pts
What is the present worth of MACHINE 7745?? (5 points)

Question 4 0 pts
What is the present worth of MACHINE A37Y ? (5 points)

Question 5 0 pts
Based on Present Worth analysis which machine should be recommended? (5 points)

○
MACHINE A37Y

○
MACHINE 7745

Jupiter’s is considering investing time and administrative expense on an effort that promises one large payoff in the future, followed by additional expenses over a 10-year horizon. The cash flow profile is shown in the table below. Jupiter’s MARR is 12 percent/year.

EOY	0	1	2	3	4	5	6	7	8	9	10
Cash Flow (K$)	−$2	−$10	−$12	−$14	−$16	−$18	$200	−$10	−$12	−$14	−$100

Answer the following two questions.

Question 6 0 pts

What is the future worth of this investment? (10 points)

Question 7 0 pts

Should Jupiter invest? (5 points)

Yes

No

Question 8 0 pts

Baon Chemicals Unlimited purchases a computer-controlled filter for $100,000. They borrow half the purchase price from a bank at 15 percent compounded annually. The loan is to be paid back with equal annual payments over a 5-year period. The filter is expected to last 10 years, at which time it will have a salvage value of $10,000. Over the 10-year period, the operating and maintenance costs are expected to equal $20,000 in year 1 and increase by $1,500/year each year thereafter. By making the investment, annual fines of $50,000 for pollution will be avoided. Baon expects to earn 12 percent compounded annually on its investments.

Based on an annual worth analysis, what is the annual worth of the filter?

(15 points)

Question 9 0 pts

Orpheum Productions in Nevada is considering three mutually exclusive alternatives for lighting enhancements to one of its recording studios. Each enhancement will increase revenues by attracting directors who prefer this lighting style. The cash flow details, in thousands of dollars, for these

enhancements are shown in the chart below. MARR is 10 percent/year. Based on future worth analysis analysis, which alternative (if any) should be implemented?

End of Year	0	1	2	3	4	5	6
Light Bar	−$6,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000
Sliding Spots	−$14,000	$3,500	$3,500	$3,500	$3,500	$3,500	$3,500
Reflected Beam	−$20,000	$0	$2,300	$4,600	$6,900	$9,200	$11,500

(Remember to include your work in the excel submission to fetch full points.)

(20 Points)

○
LIGHT BAR

○
SLIDING SPOTS

○
REFLECTED BEAM

Question 10 0 pts

Deep Seas Submarine must implement a new engine in its submarines to meet the needs of clients who desire quieter operation.

Two designs, both technologically feasible, have been created, and Deep Seas wishes to know which one to pursue.

1) Design 1 would require an up-front manufacturing cost of $15,000,000 and will cost 2,500,000 per year for 3 years to swap out the engines in all its current submarines.

2) Design 2 will cost $20,000,000 up front, but due to a higher degree of compatibility will only require $1,500,000 per year to
implement.

MARR is 10 percent/year. Based on an annual worth, determine which design should be chosen.

(20 points)

○
DESIGN 2

◉
DESIGN 1

Chapter 8 Questions:

Question 11 0 pts

Deep Seas Submarine must implement a new engine in its submarines to meet the needs of clients who desire quieter operation. Two designs, both technologically feasible, have been created, and Deep Seas wishes to know which one to pursue. Design 1 would require an up-front manufacturing cost of $15,000,000 and will cost $2,500,000 per year for 3 years to swap out the engines in all its current submarines. Design 2 will cost $20,000,000 up front, but due to a higher degree of compatibility will only require $1,500,000 per year to implement. MARR is 10 percent/year. Based on an internal rate of return **analysis**, determine which design should be chosen. (20 points)

- (●) design 1
- ( ) design 2

Question 12 0 pts

Galvanized Products is considering purchasing a new computer system for their enterprise data management system. The vendor has quoted a purchase price of $100,000. Galvanized Products is planning to borrow one-fourth of the purchase price from a bank at 15 percent compounded annually. The loan is to be repaid using equal annual payments over a 3-year period. The computer system is expected to last 5 years and has a salvage value of $5,000 at that time. Over the 5-year period, Galvanized Products expects to pay a technician $25,000 per year to maintain the system but will save $55,000 per year through increased efficiencies. Galvanized Products uses a MARR of 18 percent/year to evaluate investments.

What is the external rate of return of this investment? (20 points)

Question 13 0 pts

Should the new computer system be purchased for Galvanized Products? (10 points)

- ( ) no
- ( ) yes

Question 14 0 pts

Please upload your excel workbook that you used to solve questions**.**

You are required to submit only one workbook. **Kindly rename each worksheet as the Question number. i.e., 1,2,3...**

Many of the questions here seem like multiple choices but require intensive excel computation, remember to include your work in the excel submission to fetch full points.

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