NAME: _____

THIS IS A TWO HOUR FIFTEEN MINUTES EXAM. YOU MUST STOP WRITING IMMEDIATELY WHEN THE END OF THE EXAM IS ANNOUNCED – PLEASE REMAIN SEATED AND WAIT FOR THE PROCTORS TO COLLECT THE EXAMS.

YOU ARE ALLOWED TO LEAVE ONLY AFTER HALF AN HOUR HAS PASSED SINCE THE START OF THE EXAM.

YOU *ARE ALLOWED* TO LEAVE BEFORE THE EXAM IS OVER IF YOU FINISH MORE THAN FIVE MINUTES EARLY (TURN IN YOUR EXAM TO ONE OF THE PROCTORS ON YOUR WAY OUT).

DO NOT TURN THIS PAGE UNTIL THE INSTRUCTION TO BEGIN IS GIVEN.

DO NOT SEPARATE THE PAGES OF THIS EXAMINATION .

BE SURE TO PUT YOUR NAME AND STUDENT ID NUMBER ON THE TOP OF THE NEXT PAGE OF THIS EXAMINATION.

REMEMBER TO SHOW ALL WORK.

PLEASE FOLLOW ALL DIRECTIONS.

The next page contains general instructions.

There are instructions accompanying the individual questions.

Only Saif is able to answer your questions.

There are limits to the types of questions I will answer.

GOOD LUCK!

"A bank is a place that will lend you money if you prove that you don't need it."

Bob Hope

Name: _____

Student Number: _____

Finance FINA 395 Mid Term 1

Sample Mid Term Professor Saif Ullah

70 points

This exam is composed of 10 multiple choice questions and 4 multi-part word problems. Some of the sub-questions rely on information calculated in other parts of the question. Carry through errors will not be penalized. You have access to a financial calculator and you may have one 8½×11 inch "cheat sheets" with material on both sides. These sheets must be in human handwriting and may not be mechanically altered (i.e. reduced by a photocopier).

Show all work. Credit will not be given for answers without supporting information. Please limit the amount of extraneous information in your answers since it makes it difficult to ascertain your understanding. Use the backs of the pages for scratch. Do not write answers outside of the allotted space (i.e., **I do not read the backs of exams**).

Read through the exam before starting. Good luck!

Part 1 Multiple Choice _____ (30)

Part 2 Word Problems

Question 1: _____ (10)

Question 2: _____ (10)

Question 3: _____ (10)

Question 4: _____ (10)

Total: _____ (70)

Bonus _____ (5)

Part 1: Multiple Choice

1. "We pay you $10,000 a year for 10 years and thereafter you will pay us $10,000 a year forever!" – reads the Highlander (who lives forever) in an ad. What must be the rate of interest (EAR) in order for this to be a fair deal, (i.e. the rate of interest that makes the present value of these two series of cash flows equal). Assume that all payments occur at the end of the year, so the Highlander receives the first payment at the end of year one and he makes his first payment at the end of year 11.

A) No such interest rate exists
B) 0%
C) 6.5041%
D) 7.1773%
E) 8.0060%
F) 10.00%

2. Perpetual Inc stock currently sells for $40 per share (*ex-dividend*). The required rate of return for Perpetual's equity is 10%. If the company maintains a constant 4% growth rate in dividends, what was the most recent dividend per share paid on the stock?

A) $4.00
B) $1.60
C) $2.40
D) $2.31
E) $3.85
F) $6.40

3. What is the future value of the following cash flows at the end of year 3 if the interest rate is 6%? The cash flows occur at the end of each year.

Year 1	Year 2	Year 3
$5,180	$9,600	$2,250

A) $15,916.78

B) $18,109.08

C) $18,246.25

D) $19,341.02

E) $19,608.07

4. Which of the following statements is true?

A) Consol is a type of zero coupon bonds

B) Discounted payback period is usually greater than payback period for the same project

C) A zero coupon bond can sell at a premium before maturity.

D) A & C

E) B & C

F) None

5. The market price of_____ maturity bonds fluctuates _____ compared with_____maturity bonds as interest rates change (everything else being constant).

A) shorter, less, longer

B) longer, less, shorter

C) shorter, more, longer

D) both b and c

6. If a project has a net present value equal to zero, then:

I. the present value of the cash inflows exceeds the initial cost of the project.

II. the project produces a rate of return that just equals the rate required to accept the project.

III. the project is expected to produce only the minimally required cash inflows.

IV. any delay in receiving the projected cash inflows will cause the project to have a negative net present value.

A) II and III only

B) II and IV only

C) I, II, and IV only

D) II, III, and IV only

E) I, II, and III only

7. A previously purchased building, being used by another project, is to be used by a proposed project. This is an example of a(n):

A) sunk cost.
B) opportunity cost.
C) variable cost.
D) Total cost.
E) none of the above.

8. The present value break-even point is superior to the accounting break-even point because:

A) present value break-even is more complicated to calculate.
B) present value break-even covers the economic opportunity costs of the investment.
C) present value break-even is the same as sensitivity analysis.
D) present value break-even covers the fixed costs of production, which the accounting break-even does not.
E) present value break-even covers the variable costs of production, which the accounting break-even does not.

9. Efficient capital markets are financial markets :

A) in which current market prices reflect available information.
B) in which current market prices reflect the present value of securities.
C) in which there is no excess profit from using available information.
D) all of the above.
E) none of the above.

10. Which form of the efficient market hypothesis implies that security prices reflect only information contained in past prices?

A) The weak form.
B) The semi-strong form.
C) The strong form.
D) The hard form.
E) The past form.

Part 2: Word Problems

Problem 1:

Oil Patch Corporation is considering the purchase of a new machine for $300,000. The machine will reduce manufacturing costs by $75,000 annually, growing at annual inflation rate of 3%. The machine belongs to asset class 43 with a CCA rate of 30%, and Sinopec expects to sell the machine at the end of its 4-year operating life for $100,000. The firm expects to be able to reduce net working capital by $20,000 when the new machine has been installed (time=1) and keep lowering it by 5% a year, but required working capital will return to the original level when the machine is sold after 4 years. Oil Patch has marginal tax rate of 40 percent. It uses a 14 percent cost of capital to evaluate projects of this nature.

Solution

Period	0.00	1.00	2.00	3.00	4.00
Cost savings		75,000.00	77,250.00	79,567.50	81,954.53
Taxes		- 30,000.00	- 30,900.00	- 31,827.00	- 32,781.81
OCFs		45,000.00	46,350.00	47,740.50	49,172.72
Working Capital		-20,000	-21,000	-22,050	-23,152.5
Change in WC		20,000.00	1,000.00	1,050.00	- 22,050
Investment	- 300,000.00				100,000.00
Cashflows	- 300,000.00	65,000.00	47,350.00	48,790.50	127,122.22
PV(Cashflows)	- 300,000.00	57,017.54	36,434.29	32,932.20	75,266.86

CCA Tax Shields	
PV perpetual tax shields	76,794.26
PV lost tax shields	- 16,147.64
PV of CCA tax shields	60,646.61
NPV	- 37,702.50

Problem 2:

The Marx Brewing Company recently installed a new bottling machine. The machine's initial cost is $2,000, and can be depreciated on a straight line basis to a zero salvage in 5 years. The machine's per year fixed cost is $1,800, and its variable cost is $0.50 per unit. The selling price per unit is $1.50. Marx's tax rate is 34%, and it uses a 16% discount rate. Calculate the accounting break-even point on the new machine, as well as the present value break-even point for the new machine.

($1,800 + $400) / ($1.50 - $0.5) = 2,200 units.

Present value break-even is:

EAC=2,000*0.16/(1-1/1.16^5)=610.81

$$\frac{\$610.81 + \$1{,}800(1-.34) - \$400(.34)}{(\$1.5-0.5)(1-.34)} = 2{,}519$$

Problem 3:

As the winner of the Housecleaners sweepstakes, you are entitled to one of the following prizes:

A. $999,999 immediately.

B. $100,000 per year forever.

C. $180,000 per year for the next 10 years starting immediately.

D. $400,000 payable every 2 years over 20 years. First Payment is at time 2 and last at time=20.

E. $ 39,000 next year growing by 6% forever.

In terms of present values, which prize should be chosen if r = 9%?

A: $999,999

B: 1,111,111.11

C: 1,259,144.44

D: Effective 2 Year Rate=0.1881

PV= 1,747,090.0802

E: 1,300,000.00

Problem 4:

a) Toy2 Motors Inc wants to undertake a new project. It will cost $550 dollars today. The project will generate annual cashflow of $100.00 forever. What is the NPV of this project? The appropriate discount rate is 20%. 3 Marks

-550+100/0.2=-$50

b) Suppose after one year, the new information will arrive and Toy2 will either have a cashflow of $50 or $ 150 forever with equal probability. After one year, you can abandon the project if NPV is negative. If you decide to abandon the project after one year, you will realize $400 as salvage value. What is value of this option? 7 Marks

PV=-550+100/1.20+1/1.20*(0.5*400+0.5*150/0.20)=12.50

Value of Option=12.50 - (-50)=62.50