TELFER

VOTRE LIEN AVEC CE QUI COMPTE — CONNECTS YOU TO WHAT MATTERS

ADM 2350
Final Exam
Winter 2018

Name: _____

Student ID #: _____

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Statement to be signed by the student:
I have read the text on academic integrity and I pledge **NOT** to have committed or attempted to commit academic fraud in this examination.

Signed:_____

Note: An examination copy without this signed statement will **NOT** be graded and will receive a final exam grade of **ZERO**.

Instructions:

- Use this examination booklet for rough work only
- Record your answers on scantron: only answers recorded on the scantron will be graded
- Calculators are allowed.
- One standard size (A4) 2-sided self-prepared formula sheet ("cheat sheet") is allowed.
- You must keep at least 6 decimal digits while performing your calculations
- Round your answer to the appropriate number of significant digits for each multiple-choice question
- If your answer is not among the proposed multiple-choice answers – choose the closest answer.

1. Suppose that you are offered either $2,500 at the end of each year for 5 years or a lump sum today. The prevailing interest rate is 6%. To the nearest dollar, how much money would have to be offered to you today so that you are indifferent between the two choices?
a) $12,500
b) $10,531
c) $11,632
d) $ 9,500
e) $12,137

2. You currently have $1 million in your bank account earning 10% interest per year compounded annually. To the nearest dollar, how much can you withdrawal from this account each year to have a zero balance left in the account after the 20th withdraw? Assume that the first withdrawal will be made today (at t=0) and all withdrawal amounts are equal.
a) $106,781
b) $117,460
c) $ 50,000
d) $109,754
e) $55,000

3. Your sister plans to contribute $5,000 to her RRSP savings account each year for 40 years starting today (at t=0), while you plan to contribute the same amount in your RRSP savings account each year for 40 years starting exactly 1 year from now (at t=1). Both accounts will earn annual interest rate of 6%. To the nearest dollar, what will be the difference in the future amounts in your sister's and your RRSP savings accounts at the end of 40 years (at t=40)?
a) $50,540.25
b) $49,635.24
c) $46,428.59
d) $5,000
e) $5,300

4. Maive is celebrating her birthday today and has decided to save for university education. She will begin her university studies on her 20th birthday and will need $8,000 per year, at the end of each of her 4 years of studies. She will make a deposit in her savings account one year from today and identical deposits each year after that up to and including the last deposit on her 20th birthday. Her deposits will earn 6% interest compounded annually. Annual deposits of $3,974 will enable her to meet her financial needs for her university studies. How old is Maive today?
a) 16 years old
b) 14 years old
c) 12 years old
d) 10 years old
e) 8 years old

Questions 5-8 are based on the following information:
You have taken a 20-year $300,000 mortgage loan today at 0.25% monthly interest rate. You will repay the entire loan amount over the next 20 years by making equal monthly payments of $1,663.79 at the end of each month over the 20-year loan term.

5. To the nearest $0.01, how much of your second payment goes toward interest?
a) $747.72
b) $748.67
c) $749.12
d) $750.00
e) $751.24

6. To the nearest dollar, what will be the principal outstanding after 10 years of monthly payments (right after your 120th payment?
a) $210,612
b) $190,782
c) $182,425
d) $172,305
e) $150,000

7. If, after 10 years, you'll decide to increase your monthly payments by $500 to $2,163.79 starting from 121st payment until you completely repay your mortgage, by how many months (rounded to the nearest month) such change will decrease the length of your mortgage?
a) 31 months
b) 24 months
c) 23 months
d) 15 months
e) 13 months

8. If, 5 years from now, you supplement your regular 60th payment with additional $25,000 prepayment, by how many months (rounded to the nearest month) will this prepayment decrease the length of your mortgage assuming you maintain your $1,663.79 per month payment schedule?
a) 31 months
b) 24 months
c) 23 months
d) 15 months
e) 13 months

9. Today (at t=0) you won an "odd" lottery that pays you $1000 each odd year starting next year forever, i.e., it pays you $1000 at t=1, 3, 5,… . To the nearest dollar, what is the present value of your winning if annual interest rate is 10%?
a) $4,545
b) $4,762
c) $5,000
d) $5,238
e) $5,500

10. To the nearest cent, what is the stock price of XYZ inc. if it does not pay any dividends for the first 5 years, pays $2 dividend 6 years from now (at t=6) and continue paying annual dividends from t=6 forever with a constant dividend growth rate of 2%? Assume the annual interest rate is 7%
a) $21.32
b) $26.65
c) $28.52
d) $29.85
e) $31.34

11. Given a fixed APR, which of the following statements about effective annual interest rates (EAR) are NOT correct?
a) Higher-frequency compounding increases the EAR.
b) The APR is never higher than EAR so long as the compounding frequency is at least once per year.
c) If the number of times you compound the interest rate converges to infinity, then the EAR will converge to infinity as well.
d) Both (a) and (b)
e) All of the above.

12. Which of the following statements are not true?
a) An increase in interest rate usually leads to a decrease in the bond's price
b) The current yield of a bond trading at par equals the bond's YTM (yield to maturity)
c) At a constant YTM, a bond's price will converge to its par value when the bond matures.
d) If two risk-free bonds have the same YTM, same face value, and both bonds pay annual coupons with the same annual coupon rate, then these bonds must have the same market price.
e) If the current yield on a bond held to maturity exceeds the bond's YTM, the investor in the bond will have a capital loss when the bond matures.

13. You've just paid $917.50 for a 10% annual coupon bond with $1000 face value and 5 years left to maturity. This implies that the YTM (to the nearest 0.01%) on the bond you've purchased must be:
a) 8.00%
b) 9.00%
c) 10.00%
d) 14.05%
e) 12.31%

14. Five years ago, Alpha Company issued 15-year bonds with 6% annual coupon rate (paid semi-annually) and $1000 face value. Today these bonds have 10% yield to maturity. To the nearest dollar, at what price should these bonds be trading to-day?
a) $ 1000
b) $ 1,298
c) $ 1,158
d) $ 813
e) $ 751

15. Consider a 10-year bond that pays 5% annual coupons, has a face value of $1000 and currently sells on the market for $1,081.11. In addition, this bond is callable 3 years from now with a call price of $1,100. The yield to call (YTC) of this bond (rounded to the nearest 0.01%) is:
a) 5.00%
b) 4.00%
c) 4.84%
d) 5.18%
e) 4.61

16. Find the dividend yield of a stock that pays annual per-share dividends that grow at a constant rate of 4% per year if shareholders require a 10% expected rate of return.
a) 4%
b) 6%
c) 7%
d) 10%
e) The provided information is not sufficient to answer this question

17. Find the price (rounded to the nearest cent) of a common share that is expected to pay dividends D_1=$4, D_2=$7 at t=1 and at t=2 respectively and $8 dividend at the end of each year after that. Assume shareholders demand a 10% expected rate of return per year.
a) $16.03
b) $66.12
c) $75.54
d) $89.42
e) $101.87

18. Using information in Question 17, find the capital gain yield (rounded to the nearest 0.1%) for the first year (from t=0 till t=1)
a) 0%
b) 4.7%
c) 7.1%
d) 8.4%
e) 10%

19. Using information in question 17, find the capital gain yield for the seventh year (from t=6 till t=7)

a) 0%
b) 4.7%
c) 7.1%
d) 8.4%
e) 10%

20. An Allied Northern preferred shares pay a $3.84 annual dividend. What is the value of the shares (rounded to the nearest cent) to an investor who requires a 9.5% return?
a) $40.42
b) $42.67
c) $38.40
d) $37.44
e) The provided information is not sufficient to answer this question

21. Consider two stocks X and Y such that $\beta_X > \beta_Y$ while $\sigma_X < \sigma_Y$ (where σ stands for the standard deviation of the returns). If R_X and R_Y are expected returns on stock X and Y respectively and the stocks are priced correctly, then:
a) $R_X < R_Y$
b) $R_X > R_Y$
c) $R_X < R_Y$ if and only if $\beta_X \times \sigma_X > \beta_Y \times \sigma_Y$
d) $R_X > R_Y$ if and only if $\beta_X \times \sigma_X > \beta_Y \times \sigma_Y$
e) It is not possible to have both $\beta_X > \beta_Y$ and $\sigma_X < \sigma_Y$

22. ABC expects to pay $5 dividends next year and the dividends are expected to grow at 4% per year indefinitely. If the current stock price is $80 per share and new equity issue requires 7% flotation costs, what is the cost of new equity (rounded to the nearest 0.01%)?
a) 3.25%
b) 10.25%
c) 10.72%
d) 10.97%
e) 17.25%

23. Find the WACC of a company with the target D/E = 0.5 if the existing debt of the company consists of 20-year 6% coupon bonds issued 5 years ago at par and that have current YTM= 8%. The company's cost of equity is 15% and the corporate tax rate is 40%.
a) 8.7%
b) 9.1%
c) 9.9%
d) 10.8%
e) 11.6%

24. Find the beta of a portfolio that consists of $300.000 investment in stock A with beta =0.8; $500,000 investment in stock B with beta = 1.2 and $200,000 investment in a risk-free asset.
a) 0.84
b) 1.00
c) 1.04
d) 1.05
e) 1.1%

25. Find the risk-free rate (rounded to the nearest 1%) if the expected market rate of return is 12% and a stock with beta = 0.5 has an expected return of 8%.
a) 0%
b) 2%
c) 4%
d) 6%
e) 8%

26. For a normal project (i.e., for a project with non-negative future cash flow) with positive NPV which of the following is TRUE?
a) The IRR must be higher than the cost of capital.
b) The project may be rejected according to the payback criteria.
c) The project may be rejected according to the discounted payback criteria.
d) All of the above statements are true
e) None of the above

Questions 27-30 are based on the following information:
XYZ inc. considers a project that requires $120,000 investment at t=0 and can generate cash flows of $30,000; $40,000; $40,000; and $50,000 in years 1, 2, 3, and 4 respectively. All cash flows are after-tax net cash flows. Assume the required cost of capital is 5%

27. To the nearest dollar, what is the NPV of the project?
a) -$10,134
b) $0
c) $7,185
d) $20,541
e) $40,000

28. Rounded to the second decimal place, what is the PI (profitability index) of the project?
a) 0.92
b) 1
c) 1.09
d) 1.17
e) 1.33

29. Find DPB (discounted payback period) of the project
a) Between 1 and 2 years
b) Between 2 and 3 years
c) Between 3 and 4 years
d) More than 4 years
e) DPB does not exist

30. To the nearest dollar, what is the EAA (equivalent annual annuities) of the project?
a) -$2,858
b) $0
c) $2,026
d) $5,793
e) The provided information is not sufficient to answer this question

31. XYZ inc. must choose exactly one of the projects from a given set of available projects. Once the project is completed, it will not be repeated. Which investment criterion from the list below is more appropriate for the XYZ to use? Assume all projects have non-negative future cash flows.
a) NPV
b) IRR
c) PB
d) DPB
e) EAA

32. XYZ inc. must choose exactly one of the projects from a given set of available REPEATING projects. Which investment criterion from the list below is more appropriate for the XYZ to use? Assume all projects have non-negative future cash flows.
a) NPV
b) IRR
c) PB
d) DPB
e) EAA

33. Gandhi Construction company builds condominiums for sale and is deciding whether or not to go ahead with an investment in a new condominium project, adjacent to a block of condominiums built last year, which are still not entirely sold. Which of the following should **NOT** be treated as part of the new project's cash flows in calculating its NPV?
a) The cost of a survey incurred last year by the company to assess the potential market demand for the condominiums to be built under the new project, before the decision to accept or reject the new project has to be made.
b) Potential effect on the sales of condominiums built last year
c) Capital expenditure on electronic equipment that will be needed for the new project
d) An old equipment that the company already owns; this equipment has a substantial market value and will be used for the new project
e) All of the above should be treated as part of the new project's cash flows in calculating its NPV

Questions 34-40 are based on the following information:
XYZ inc. would like to invest in new equipment that will result in extra $60,000 pre-tax net revenue per year for the next 7 years. The equipment costs $250,000, belongs to UCC class 10 (30% CCA), and can be sold for $25,000 salvage value at the end of the project (i.e., at the beginning of the 8^{th} year). The company expects to increase its NWC by $5,000 at the beginning of the project and by another $3,000 at the end of the 5^{th} year. All NWC will be recovered at the end of the project (i.e., at the end of the 7^{th} year). XYZ has other equipment of the same type and it expects its UCC account to remain open for foreseeable future and does not expect to buy any new equipment at t=8. The XYZ's cost of capital is 12% and its corporate tax rate is 40%.

34. Find CCA for the first year
a) $28,500
b) $29,250
c) $33,750
d) $37,500
e) $38,250

35. Find UCC at the end of the second year
a) $133,875
b) $148,750
c) $152,725
d) $162,562.50
e) $133,875

36. Find XYZ's cash flow at t=2
a) $53,250
b) $55,410
c) $55,500
d) $55,950
e) 57,750

37. To the nearest dollar, find the PV of XYZ's operational after tax cash flow from this project
a) $152,986
b) $154,198
c) $156,431
d) $161,218
e) $164,295

38. To the nearest dollar, find the PV of the tax shield generated by this project
a) $38,138
b) $60,842
c) $63,563
d) $64,915
e) $67,602

39. If X and Y are solutions to questions 37 and 38 respectively, then the NPV of the project (rounded to the nearest dollar) is equal to
a) X+Y-$238,691
b) X+Y-$240,072
c) X+Y-$241,430
d) X+Y-$241,775
e) X+Y-$243,072

40. If XYZ would be able to avoid the increase in NWC at the end of the 5^{th} year, then the answer to Question 39 would
a) Have increased by $1642.95
b) Have increased by $345.23
c) Not have changed
d) Have decreased by $345.23
e) Have decreased by $1642.95