PART I (45 points total)

Instructions: **Do problem 1 (mandatory) and pick one problem the following five and solve only that problem (total 2 problems: one mandatory and one a choice among five)**

PROBLEM 1 (mandatory) (25 points) MERGERS & ACQUISITIONS

Consider the following premerger information about Firm X and Firm Y:

	Firm X	Firm Y
Total earnings	$800	$500
Shares outstanding	550	200
Price per share	$40	$15

Assume that Firm X acquires Firm Y via an exchange of stock at a price of $20 for each share of Y's stock. Both X and Y have no debt outstanding.

a) What will the earnings per share, EPS, of Firm X be after the merger? **(7 points)**

b) What will Firm X's price per share be after the merger if the market incorrectly analyzes this reported earnings growth (that is, the price-earnings ratio does not change)? **(7 points)**

c) What will the price-earnings ratio of the postmerger firm be if the market correctly analyzes the transaction? **(3 points)**

d) If there are no synergy gains, what will the share price of X be after the merger? What will the price-earnings ratio be? What does your answer for the share price tell you about the amount X bid for Y? Was it too high? Too low? Explain. **(8 points)**

Answer (in the space below)

PROBLEM 2 (optional) **(25 points) CAPITAL STRUCTURE: Limits to the use of debt**

Big Star Company is a regional chain department store. It will remain in business for one more year. The probability of a boom year is 60% and of a recession is 40%. It is projected that Big Star will generate a total cash flow of $250 million in a boom year and $100 million in a recession. The firm's required debt payment at the end of the year is $150 million. The market value of Big Star's outstanding debt is $108.93 million. Assume a one-period model, risk neutrality and an annual discount rate of 12% for both the firm's debt and its equity. Big Star pays no taxes.

a) What is the value of the firm's equity? **(4 points)**
b) What is the promised return on Good Time's debt? **(4 points)**
c) What is the value of the firm?**(4 points)**
d) How much would Good Time's debt be worth if there were no bankruptcy costs? **(4 points)**
e) What payoff, after bankruptcy costs, do bondholders expect to receive in the event of a recession? **(4 points)**
f) What cost do bondholders expect Good Time to incur should bankruptcy arise at the end of the year? **(5 points)**

Answer

PROBLEM 3 (optional) (25 points) OPTIONS AND CORPORATE FINANCE

Maverick Manufacturing Inc. must purchase gold in three months to use in its operations. Maverick's management has estimated that if the price of gold were to rise above $375 per ounce, the firm would go bankrupt. The current price of gold is $350 per ounce. The firm's CFO believes that the price of gold will either rise to $400 per ounce or fall to $325 per ounce over the next three months. Management wishes to eliminate any risk of the firm going bankrupt. Maverick can borrow and lend at the risk-free interest rate of 16.99% per annum (effective annual yield).

a) Would Maverick be interested in buying a call option or a put option on the price of gold? In order to avoid bankruptcy, what strike price and time to expiration would the firm like this option to have? **(7 points)**

b) How much should such an option sell for in the open market? **(7 points)**

c) If no options currently trade on gold, is there a way for Maverick to create a synthetic option with identical payoffs to the option described above? If there is, how would the firm do it? **(5 points)**
How much does the synthetic option cost? Is this greater than, less than, or equal to what the actual option costs? Does this make sense? **(6 points)**

Answer

PROBLEM 4 (optional) (25 points) DIVIDEND POLICY

An all-equity company pays no dividends and its earnings for the year are $20,000. The market value balance sheet at the end of the year is given below:

Excess cash	$100,000 $400,000	Debt	$	0
Other assets		Equity	$500,000	
Total	$500,000	Total	$500,000	

The firm has 5,000 shares outstanding and is considering the following alternative uses of excess cash: (1) pay out dividends; (2) repurchase its own stock. Suppose you own 300 shares of the firm's common stock:

a) In absence of taxes and transaction costs, how will you create "home-made dividend" for yourself if the firm elects to repurchase its own stock. Support your answer with calculations. **(9 points)**

b) Suppose the effective tax rate on your dividend income (after using the dividend tax credit) will be 30%, and your realized capital gain will be taxed at 50% of your personal marginal tax rate of 40%. Also suppose your shares were originally bought at a price of $80 per share.

Will your tax liability be greater or lower with the creation of home-made dividends in part a), compared to the tax liability you will have if the firm were to pay out dividends instead of repurchasing its own stock? By how much? Support your answer with calculations. **(9 points)**

c) Will the price-earnings ratios differ under the firm's dividend payout and stock repurchase alternatives, assuming no taxes and transaction costs? Support your answer with calculations. **(4 points)**

Answer

PROBLEM 5 (optional) **(25 points)** **LEASING**

A firm wants to acquire a computer network system that costs $30,000. The system is expected to have a useful life of six years, and no residual value. Capital cost allowances could be taken at a rate of 30 percent on the declining balance, and there are other assets in the asset class. The firm, which faces a tax rate of 40 percent, could borrow under a six-year term loan at an interest rate of 15 percent. The manufacturer makes its computer network systems available either through a straight sale or through various leasing arrangements. The firm is negotiating with the manufacturer for a six-year lease. Lease payments would be made at the end of each year.

a) What are the maximum lease payments that the manufacturer could demand in order for the firm to prefer leasing over purchase? **(13 points)**

b) Assume that lease payments sought by the manufacturer under the financial lease discussed in (a) are $7,500 per year. The manufacturer also offers an operating lease that can be cancelled on a year's notice. Annual lease payments would be $10,000. The useful life of the equipment is subject to uncertainty owing to rapid technological change. What is the minimum useful life that the equipment would need to have in order for the six-year lease to prove more attractive? **(12 points)**

Answer

PROBLEM 6 (optional) (25 points) CAPITAL STRUCTURE: Basic concepts

Gamma Corporation has a total capital investment of $1,000,000 financed entirely through 20,000 shares trading at $50 per share. The firm is expected to generate a perpetual steady of $200,000 EBIT per year. Gamma plans to issue debt to retire some of its outstanding shares in order to have a capital structure with the amount of debt equal to 40% of its current all-equity capital. The debt issue will be a risk-free perpetual-end carrying a fixed interest rate of 10%. Gamma expects to general a perpetual steady stream of $200,000 EBIT per year and is subject to a 40% corporate tax rate.

a) What will be Gamma's price per share after the change in its capital structure? **(6 points)**
b) What will be Gamma's cost of equity after the change in its capital structure? **(7 points)**
c) By what percentage will Gamma's cost of equity increase as a result of change in its capital structure? **(6 points)**
d) What will be Gamma's WACC after the change in its capital structure? Will the WACC decrease or increase with increases in the debt-ratio? **(6 points)**

Answer

PART II Multiple Choice Questions Total: 50 points

Answer on the machine readable sheet attached (each correct answer worth one point)

1. Shareholders clienteles are attracted by different corporations because:
   A) they are brand loyal and like the products.
   B) they are concerned about after tax income and choose firms based on after tax yield.
   C) high tax shareholders prefer capital gains while low tax shareholders prefer dividend income.
   D) a and c.
   E) b and c.

2. One of the indirect costs of bankruptcy is the incentive for managers to take large risks. When following this strategy, the firm will:
   A) rank all projects and take the project which results in the highest expected value of the firm.
   B) rank all projects and take the project which results in the highest expected value of the firm's bonds.
   C) rank all projects and take the project which results in the highest expected value of the firm's stock.
   D) always take the low risk project.
   E) both a and b.

3. When shareholders pursue selfish strategies such as taking large risks or paying excessive dividends, these will result in:
   A) no action by debtholders since these are equity holder concerns.
   B) positive agency costs, as bondholders impose various restrictions and covenants, which will diminish firm value.
   C) investments of the same risk class that the firm is in.
   D) undertaking scale enhancing projects.
   E) lower agency costs, as shareholders have more control over the firm's assets.

4. Which of the following defensive tactics to resist a merger involve a firm's repurchase of its own shares?

   A) Poison pill
   B) Golden parachutes
   C) Exclusionary self-tender
   D) Standstill agreement
   E) c and d

5. When graphing firm value against debt levels, the debt level that maximizes the value of the firm is the level where:
   A) the increase in the present value of distress costs from an additional dollar of debt is greater than the increase in the present value of the debt tax shield.
   B) the increase in the present value of distress costs from an additional dollar of debt is

equal to the increase in the present value of the debt tax shield.

C) the increase in the present value of distress costs from an additional dollar of debt is less than the increase of the present value of the debt tax shield.
D) distress costs as well as debt tax shields are zero.
E) distress costs as well as debt tax shields are maximized.

6. In the presence of personal taxes the MM irrelevance proposition does not hold because:
A) managers have an incentive to seek alternative uses for these funds.
B) personal taxes always increase the value of dividends.
C) personal taxes reduce the value of dividends but are not sufficient to eliminate all dividends.
D) a and b.
E) a and c.

7. The increase in the stock price after a dividend increase is called the information content effect because:
   A) the change in dividend was expected by shareholders.
   B) the dividend increase signaled investors to adjust the expectations of future earning upward.
   C) the dividend change signaled investors to adjust the risk of the firm downward.
   D) the dividend change signaled shareholders that the firm could now payout more as they enter the mature phase of their business.
   E) none of the above.

8. Prior to CICA 3065, "Accounting for Leases", lease activity was only reported in financial footnotes. This off-balance-sheet-financing made firms with
   A) operating leases appear healthier than those with no leases.
   B) financial leases appear to have greater liabilities than firms using operating leases.
   C) operating leases appear to have greater liabilities than firms using financial lease.
   D) financial leases appear to be financially stronger than if the leases were on-balance-sheet-financing.
   E) all of the above.

9. A financial lease is likely to be most beneficial to both parties when:
   A) the lessor's tax rate is lower than the lessee's.
   B) the lessor's tax rate is higher than the lessee's.
   C) the lessor's tax rate is equal to the lessee's.
   D) a financial lease cannot be beneficial to both parties.
   E) a financial lease always has zero NPV, so both parties always break even.

10. The acquisition of stock has the advantage of:
   A) no shareholder meeting to vote is necessary.
   B) minority shareholders may exist.
   C) opening the bidding to others.
   D) all of the above.
   E) none of the above.

11. Which of the following factors influence the choice between merger and an acquisition of stock?
   A) Shareholders are dealt with directly to bypass target management and board of directors.
   B) In a tender offer, usually some minority shareholders do not tender stopping complete firm absorption.
   C) Target management may be unfriendly and resist an offer. Resistance usually make the stock price higher.
   D) all of the above.
   E) none of the above.

12. Which of the following are features of the purchase method of accounting?

I. The balance sheets of the acquirer and the acquired are just added together.

II. Since the new firm is jointly owned by the shareholders of the old firms, no goodwill exists.

III. The assets of the target firm must be shown at their fair market value on the books of the bidder.

IV. The difference between the purchase price and the estimated fair market value of the net assets of the target firm must be classified as goodwill and recorded on the balance sheet.

A) I and II only
B) II and IV only
C) III and IV only
D) II and III only
E) I and IV only

Use the following to answer questions 13-22:

Both firms are 100% equity-financed. Firm A can acquire firm B for $82,500 in the form of either cash or stock. The synergy value of the deal is $12,500.

		Firm B
Firm A		
Number of Shares	10,000	7,500
Price per Share	$25.00	$10.00

13. What is the merger premium over firm B's stock price?
A) 8.50%
B) 9.25%
C) 10.00%
D) 10.25%
E) 11.50%

14. What is the value of firm B to firm A?
A) $12,500
B) $57,500
C) $75,000
D) $87,500
E) $125,000

15. What is the NPV of the acquisition if cash is used?
A) $2,500
B) $5,000
C) $7,500
D) $10,000
E) None of the above.

16. What is the value of the post-merger firm following a cash acquisition?
    A) $255,000
    B) $262,500
    C) $337,500
    D) $650,000
    E) $672,525

17. What is the price per share of the post-merger firm following a cash acquisition?
    A) $25.38
    B) $25.50
    C) $25.62
    D) $25.76
    E) $27.30

18. What is the value of the new firm if firm B's stockholders are paid in stock?
    A) $255,000
    B) $262,500
    C) $337,500
    D) $650,000
    E) $672,525

19. How many shares will be given to firm B's stockholders in the stock-financed deal?
    A) 3,000
    B) 3,300
    C) 3,667
    D) 4,250
    E) 5,762

20. What will the price per share be of the post-merger firm if payment is made in stock?
    A) $25.00
    B) $25.38
    C) $25.50
    D) $25.76
    E) $27.30

21. What is the cost of acquisition when stock financing is used?
    A) $75,126
    B) $80,000
    C) $81,555
    D) $82,500
    E) $83,754

22. What is the NPV of acquiring firm B when stock financing is used?
    A) $3,746
    B) $3,925
    C) $4,122
    D) $5,000
    E) $5,510

Use the following to answer questions 23-36:

Your firm needs to either buy or lease $230,000 worth of vehicles. These vehicles have a life of 4 years after which time they are worthless. The vehicles belong in CCA class 10 (a 30% class) and can be leased at a cost of $68,000 a year for the 4 years. The corporate tax rate is 34% and the cost of debt is 10%.

23. What is the present value of the depreciation tax shield?
    A) $44,375
    B) $62,114
    C) $73,925
    D) $96,375
    E) $137,950

24. What is the amount of the after-tax lease payment?
    A) $23,800
    B) $36,750
    C) $37,500
    D) $42,300
    E) $44,880

25. What is the after-tax cost of debt?
A) 3.4%
B) 4.3%
C) 5.8%
D) 6.6%
E) 7.4%

26. What is the net advantage to leasing?
A) $4,215
B) $4,361
C) $4,435
D) $4,475
E) $5,505

27. The lessor in this case has a tax rate of 35%. What is the net advantage of leasing to the lessor?
A) -$74,126
B) -$4,592
C) $4,592
D) $21,018
E) $74,126

28. What is the amount of the break-even lease payment to the lessee?
A) $47,740
B) $51,254
C) $63,334
D) $68,009
E) $69,813

29. Given realistic estimates of the probability and cost of bankruptcy, the future costs of a possible bankruptcy are borne by:
A) by all investors in the firm.
B) debtholders only because if default occurs interest and principal payments are not made.
C) equityholders because debtholders will pay less providing less cash for the equityholders.
D) management because if the firm defaults they will lose their jobs.
E) none of the above.

30. _____ it is impossible for a tax-free acquisition to take place.
A) If an acquisition is for business purposes
B) If the purchasing firm exchanges its own stock for the selling firm's equity
C) If an acquisition is being undertaken with the express purpose of avoiding taxes

D) If the stockholders in the target firm will retain an equity interest in the bidder
E) If the selling shareholders will be considered to have exchanged their old shares for new ones of equal value

31. Generally speaking, if an acquiring firm offers the target firm cash for its stock, it will be a _____ acquisition; if the acquirer offers its own shares in return for the target firm's stock, it will be a _____ acquisition.
A) taxable; taxable
B) taxable; tax-free
C) tax-free; taxable
D) tax-free; tax-free
E) none of the above

32. All of the following are possible cash flow benefits from mergers and acquisitions EXCEPT:
A) Revenue enhancement.
B) Cost reductions.
C) Lower taxes.
D) Marketing gains.
E) Diversification benefits.

33. Which of the following types of acquisitions is (are) least likely to result in synergistic increases in value?
I. Horizontal acquisitions
II. Vertical acquisitions
III. Conglomerate acquisitions
A) I only
B) I and II only
C) I and III only
D) II and III only
E) III only

34. In general, a leveraged buyout:
A) Is limited to smaller, non-public firms.
B) Is used to take a private firm public.
C) Is used by current managers or financiers to take a firm private.
D) Involves the sale of equity securities to pay off outstanding debt.
E) Significantly lowers the leverage of the firm.

35. A successful merger requires that the:
A) P/E ratio maintains its pre-merger value.

B) Debt-equity ratio of the firm remains at its pre-merger level.
C) Book value per share must remain constant.
D) Book value per share must increase.
E) Value of the whole exceeds the value of the sum of the parts.

36. The value of firm B to firm A is equal to the value of:
A) Firm B as a stand-alone firm plus the synergy value.
B) The incremental benefit of the merger or acquisition.
C) The incremental cash flows from the merger or acquisition.
D) The incremental cash flows minus the value of firm B as a stand-alone firm.
E) The firm AB plus the incremental gain.

Use the following to answer questions 37-44:

Alex, Inc. is financed 100% with equity. The firm has 100,000 shares of stock outstanding with a market price of $5 per share. Total earnings for the most recent year are $50,000. The firm has cash of $25,000 in excess of what is necessary to fund its positive NPV projects. The firm is considering using the cash to pay an extra dividend of $25,000 or, alternatively, to repurchase $25,000 of stock. The firm has other assets worth $475,000 (market value). For each of the questions that follow, assume there are no transaction costs, taxes, or other market imperfections.

37. Assume the firm pays the $25,000 excess cash in the form of a cash dividend. What will be the firm's earnings per share once the dividend is paid?
A) $0.25
B) $0.39
C) $0.45
D) $0.50
E) $0.53

38. Assume the firm pays the $25,000 excess cash in the form of a cash dividend. What will be the firm's price/earnings ratio once the dividend is paid?
A) 9.00
B) 9.25
C) 9.50
D) 9.75
E) 10.00

39. Assume the firm pays the $25,000 excess cash in the form of a cash dividend. What will be the market price per share of Alex's stock once the dividend is paid?
A) $4.50
B) $4.75
C) $5.00
D) $5.25
E) $5.50

40. Assume the firm pays the $25,000 excess cash in the form of a cash dividend. You own

1,000 shares and this comprises your total wealth. Once the dividend is paid, what is your total wealth?
A) $4,500
B) $4,750
C) $5,000
D) $5,250
E) $5,500

41. Assume the firm uses the $25,000 excess cash to buy back stock at $5 per share. What will be the firm's earnings per share after the repurchase?
A) $0.25
B) $0.39
C) $0.45
D) $0.50
E) $0.53

42. Assume the firm uses the $25,000 excess cash to buy back stock at $5 per share. What will be the firm's price/earnings ratio after the repurchase?
A) 9.00
B) 9.25
C) 9.50
D) 9.75
E) 10.00

43. Assume the firm uses the $25,000 excess cash to buy back stock at $5 per share. What will be the market price per share of Alex's stock after the repurchase?
A) $4.50
B) $4.75
C) $5.00
D) $5.25
E) $5.50

44. Assume the firm uses the $25,000 excess cash to buy back stock at $5 per share. You own 1,000 shares before the repurchase and this comprises your total wealth. If you sold none of your shares back to the firm, what is your total wealth after the repurchase is completed?
A) $4,500
B) $4,750
C) $5,000
D) $5,250
E) $5,500

45. The payoff diagram for a put with the same exercise price and premium as the call on the same underlying asset with the same maturity is:
A) the inverse of the call diagram along the put price.

B) unrelated to the call diagram no matter what the exercise price.
C) the mirror image of the call diagram around the exercise price.
D) exactly the same as the call diagram for the given exercise price.
E) None of the above.

46. A forward contract is an agreement between two parties for a sale:
A) Of goods delivered today and the price determined in the future.
B) Of an unspecified quantity in the future at a price set today.
C) At some future date with both the quantity and the price determined on that future date.
D) At some future date with the quantity determined today and the price determined in the future.
E) At some future date with both the quantity and price determined today.

47. Investing in combinations of options may result in:
A) no difference in payoff patterns.
B) a mirror image of past results.
C) offsetting positions resulting in a riskless return.
D) a and b.
E) b and c.

48. In which of the following does money NOT change hands when the contract is created?
I. Futures contracts
II. Options contracts
III. Forward contracts
A) I only
B) II only
C) III only
D) I and II only
E) I and III only

49. Which of the following arrangements is a zero sum game?
I. Futures contracts
II. Options contracts
III. Forward contracts
A) I only
B) II only
C) I and II only
D) III only
E) I, II, and III

50. Which one of the following conditions when combined with long-term, fixed-rate, low interest loans would tend to increase the financial risk of lending institutions the most?

A) Volatile short-term rates that are relatively low
B) Volatile short-term rates that are relatively high
C) Fixed short-term rates that are relatively low
D) Volatile long-term rates that are relatively low
E) Fixed long-term rates that are relatively low

Final Exam Formula Sheet (ADM 3350)

1. $R_E = D_1/P_0 + g$
2. $R_E = R_f + \beta_E \times \left[R_M - R_f\right]$
3. $WACC = \left(E/V\right) \times R_E + \left(D/V\right) \times R_D \times \left(1 - T_C\right)$
4. $V_u = EBIT/R_E^u = V_L = E_L + D_L$
5. $R_E = R_A + \left(R_A - R_D\right) \times \left(D/E\right)$
6. $V_L = V_U + T_C \times D$
7. $V_U = EBIT \times \left(1 - T_C\right)/\rho$ and $V_L = \dfrac{EBIT \times \left(1 - T_C\right)}{WACC}$
8. $R_E = \rho + \left(\rho - R_D\right) \times \left(D/E\right) \times \left(1 - T_C\right)$
9. P/E ratio = Price per share / Earnings per share
10. Dividend payout ratio = Dividends / Net income
11. $$NPV_{Lea\sin g} = I - \left\{ \left[\sum_{t=1}^{n} \frac{L_t \times (1-T)}{(1+k)^t} \right] + \left[\frac{I \times d \times T}{k+d} \right] \left[\frac{1+0.5k}{1+k} \right] - \left[\frac{1}{(1+k)^n} \right] \left[\frac{SV \times d \times T}{k+d} \right] + \sum_{t=1}^{n} \frac{SV}{(1+k)^n} \right\}$$
12. $V_{AB} > V_A + V_B$
13. $\Delta V = V_{AB} - (V_A + V_B)$
14. $V_B^* = V_B + \Delta V$
15. $NPV = V_B^* -$ Cost to Firm A of the acquisition
16. $$NPV = -\left[PQ + v(Q' - Q)\right] + \frac{\left[(P - v)(Q' - Q)\right]}{R}$$
17. *APR = periodic rate* 365/(net period - discount period)*
18. *EAR = (1 + (periodic rate) to the power [(365/(net period-discount period)]- 1*

19..*PV* of an Annuity = $PV(A,r,n) = A\left[\frac{1 - \frac{1}{(1+r)^n}}{r}\right]$