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ADM 3350 B

Fall 2020

CORPORATE FINANCE

SOLUTIONS MIDTERM EXAMINATION – October 19th, 2020

Professor: Kaouthar LAJILI, **PhD., CPA, CGA** Duration: 90 minutes

INSTRUCTIONS

- **Open books, open notes online exam**
- **Answer all questions**
- **Submit the entire file on Brightspace**
- **Calculators are permitted.**
- **Use three decimals for all calculated results.**

Part I	60	
Part II	40	
TOTAL	100	

NAME: _____

STUDENT #: _____

PART I: Multiple Choice Questions (60 points, each question worth 2 points)

Please bold or write <u>the</u> correct answer

1. Which one of the following will decrease the operating cycle?
   A. Paying accounts payable faster.
   B. Discontinuing the discount given for early payment of an accounts receivable.
   C. Decreasing the inventory turnover rate.
   D. Collecting accounts receivable faster.
   E. Increasing the accounts payable turnover rate.

2. The two kinds of shortage costs are:
   A. commitment costs and costs related to safety reserves.
   B. commitment costs and costs related to supply factors.
   C. commitment costs and order costs.
   D. order costs and costs related to safety reserves.
   E. order costs and costs related to supply factors

3. In an "ideal" economy:
   A. cash is zero.
   B. long-term debt is zero.
   C. net working capital could be zero.
   D. short-term debt is zero.

4. The minimum total cost of holding current assets occurs at the:
A. intersection of the carrying costs and shortage costs curves.
B. intersection of the marginal cost and average variable costs curves.
C. minimum for both the carrying costs and shortage costs curve.
D. minimum of the average variable cost curve.

5. The Impromptu Party Company has estimated all their cash inflows and outflows for the coming quarter. The quarterly income statement indicates a strong profit but the cash budget indicates a problem with operations giving a shortfall in the cash balance. Why might there be a problem and how might it be solved?
   A. cash inflows are too large and they will need to invest in marketable securities.
   B. cash inflows and outflows are not synchronized with outflows occurring before the inflows. They should arrange a line of credit with the bank.
   C. quarterly taxes are making the company unprofitable and siphoning of all the cash. They need to charge more expenses to reduce taxes.
   D. the company has too many loans outstanding requiring several different payments. They should a new long-term loan and consolidate all the others.

6. The carrying value of its account receivable is $700,000 and the average collection period is 45 days. The firm's credit sales per day are:
   A. $15,555.56.
   B. $23,333.33.
   C. $4,666,666.67.
   D. $700,000.00.

7. A fraction of the available credit on a loan agreement deposited by the borrower with the bank in a low or non-interest-bearing account is called a:
A. compensating balance.
B. cleanup loan.
C. letter of credit
D. line of credit.

8. Sources of cash do not include:
A. increases in net income.
B. increases in depreciation.
C. decreases in accounts payable.
D. increases in notes payable.
E. increases in taxes payable.

9. The inventory turnover for the Sneeky Company is 8 times and its day's sales outstanding is 55. What is the operating cycle for Sneeky given a 365-day year.
A. 63.00
B. 6.86
C. 100.63
D. 46.98

10. If the use of supplier financing decreases and is replaced by cash financing for the same level of business activity, the cash cycle will:
A. increase because days in payables decrease.
B. stay the same because the change is only on the operating cycle.
C. decrease because days in payables decrease
D. stay the same because business activity does not change.
E. stay the same because cash is used for payment.

11. In terms of the decision of what to do with extra cash, the firm's managers should undertake projects only if:
A. the firm never pays a dividend.
B. the expected return on the project is greater than that of an asset of similar risk.
C. the expected return on the project is less than that of an asset of similar risk.
D. the expected return on the project is equal to that of an asset of similar risk.

12. The WACC is used to _____ the expected cash flows when the firm has _____.
A. discount; debt and equity in the capital structure.
B. capitalize; short term financing on the balance sheet.
C. increase; debt and equity in the capital structure.
D. decrease; short term financing on the balance sheet.

13. When using the cost of debt, the relevant number is the:
A. pre-tax cost of debt since most corporations pay taxes at the same tax rate.
B. pre-tax cost of debt since it is the actual rate the firm is paying bondholders
C. post-tax cost of debt since dividends are tax deductible
D. post-tax cost of debt since interest is tax deductible.

14. In an EPS- EBIT graphical relationship, the slope of the debt ray is steeper than the equity ray. The debt ray has a lower intercept because:
A. more shares are outstanding for the same level of EBIT.
B. the break-even point is higher with debt.
C. a fixed interest charge must be paid even at low earnings
D. the amount of interest per share has only a positive effect on the intercept
E. the higher the interest rate the greater the slope

15. In an EPS-EBIT graphical relationship, the debt ray and equity cross. At this point the equity and debt are:
A. equivalent with respect to EPS but above and below this point equity is always superior.
B. at breakeven in EPS but above this point debt increases EPS via leverage and decreases EPS below this point.
C. equal but away from breakeven equity is better as fewer shares are outstanding.
D. at breakeven and MM Proposition II states that debt is the better choice.
E. at breakeven and debt is the better choice below breakeven because small payments can be made.

16. Lengthening the credit period _____ the price paid by the customer. Generally, this acts to _____ sales.

A. increases; increase
B. increases; decrease
C. decreases; decrease
D. decreases; increase
E. increases; have no effect on

17. Thompson & Thomson is an all equity firm that has 500,000 shares of stock outstanding. The company is in the process of borrowing $8 million at 9% interest to repurchase 200,000 shares of the outstanding stock. What is the value of this firm if you ignore taxes?
A. $20.0 million.
B. $20.8 million.
C. $21.0 million.
D. $21.2 million.
E. $21.3 million

18. MM Proposition I with no tax supports the argument that:
A. business risk determines the return on assets.
B. the cost of equity rises as leverage rises.
C. it is completely irrelevant how a firm arranges its finances.
D. a firm should borrow money to the point where the tax benefit from debt is equal to the cost of the increased probability of financial distress.
E. financial risk is determined by the debt-equity ratio.

19. What is its cost of equity if there are no taxes or other imperfections? The firm has a debt-to-equity ratio of .60. Its cost of debt is 8%. Its overall cost of capital is 12%.
A. 18%.
B. 14.4%.
C. 10%.
D. 13.5%.

20. The Consolidated Transfer Co. is an all-equity financed firm. The beta is .75, the market risk premium is 8% and the risk-free rate is 4%. What is the expected return of Consolidated?
A. 10%.
B. 7%.
C. 13%.
D. 9%.
E. 8%.

21. Financial leverage impacts the performance of the firm by:
A. increasing the volatility of the firm's EBIT.
B. decreasing the volatility of the firm's EBIT.
C. decreasing the volatility of the firm's net income.
D. increasing the volatility of the firm's net income

22. The interest tax shield is a key reason why:
A. the required rate of return on assets rises when debt is added to the capital structure.
B. the value of an unlevered firm is equal to the value of a levered firm.
C. the net cost of debt to a firm is generally less than the cost of equity.
D. the cost of debt is equal to the cost of equity for a levered firm.
E. firms prefer equity financing over debt financing.

23. ABC Manufacturing historically produced products that were held in inventory until they could be sold to a customer. The firm is now changing its policy and only producing a product when it receives an actual order from a customer. All else equal, this change will:
A. increase the operating cycle.
B. lengthen the accounts receivable period.
C. shorten the accounts payable period.
D. decrease the cash cycle.
E. decrease the inventory turnover rate.

24. Cash cycle equals:

A. inventory period plus accounts receivable period.
B. change in net working capital period.
C. operating cycle plus accounts payable period.
D. operating cycle plus inventory period.
E. none of the above.

25. The Modigliani-Miller Proposition I without taxes states:
A. A firm cannot change the total value of its outstanding securities by changing its capital structure proportions.
B. When new projects are added to the firm the firm value is the sum of the old value plus the new.
C. Managers can make correct corporate decisions that will satisfy all shareholders if they select projects that maximize value.
D. The determination of value must consider the timing and risk of the cash flows.

26. MM Proposition I with taxes supports the theory that:
A. there is a positive linear relationship between the amount of debt in a levered firm and its value.
B. the value of a firm is inversely related to the amount of leverage used by the firm.
C. the value of an unlevered firm is equal to the value of a levered firm plus the value of the interest tax shield.
D. a firm's cost of capital is the same regardless of the mix of debt and equity used by the firm.
E. a firm's weighted average cost of capital increases as the debt-equity ratio of the firm rises.

27. MM Proposition I with taxes is based on the concept that:
A. the optimal capital structure is the one that is totally financed with equity.
B. the capital structure of the firm does not matter because investors can use homemade leverage.
C. the firm is better off with debt based on the weighted average cost of capital.
D. the value of the firm increases as total debt increases because of the interest tax shield.
E. the cost of equity increases as the debt-equity ratio of a firm increases.

28. The reason that MM Proposition I does not hold in the presence of corporate taxation is because:
A. levered firms pay less taxes compared with identical unlevered firms.
B. bondholders require higher rates of return compared with stockholders.
C. earnings per share are no longer relevant with taxes.
D. dividends are no longer relevant with taxes.

29. The change in firm value due to infusion of debt in the presence of corporate taxes is:
A. positive as equity holders face a lower effective tax rate.
B. positive as equity holders gain the tax shield on the debt interest.
C. negative because of the increased risk of default and fewer shares outstanding.
D. negative because of a reduction of equity outstanding.

30. A firm has a debt-to-equity ratio of 1. Its cost of equity is 16%, and its cost of debt is 8%. If the corporate tax rate is.25, what would its cost of equity be if the debt-to-equity ratio were 0?
A. 11.11%.
B. 12.57%.
C. 13.33%.
D. 16.00%.

PART II Problem **(Total 40 points)**

Ch. 16: **Capital Structure**

Shadow Corp. has no debt but can borrow at 7.2 percent. The firm's WACC is currently 9 percent, and the tax rate is 35 percent.

A. What is Shadow's cost of equity? **(10 points)**
B. If the firm converts to 20 percent debt, what will its cost of equity be? **(10 points)**
C. If the firm converts to 60 percent debt, what will its cost of equity be? **(10 points)**
D. If the firm converts to 20 percent debt, what will the company's WACC be? What if it converts to 60 percent debt? **(10 points)**

Answer:

Explanation:
a.
For an all-equity financed company:

WACC = $r_0 = r_S = 0.090$, or 9.00%

b.
To find the cost of equity for the company with leverage, we need to use M&M Proposition II with taxes, so:

$r_S = r_0 + (r_0 - r_B)(B / S)(1 - t_C)$
$r_S = 0.090 + (0.090 - 0.072)(0.20 / 0.80)(1 - 0.35)$
$r_S = 0.0929$, or 9.29%

c.
Using M&M Proposition II with taxes again, we get:

$r_S = r_0 + (r_0 - r_B)(B / S)(1 - t_C)$
$r_S = 0.090 + (0.090 - 0.072)(0.60 / 0.40)(1 - 0.35)$
$r_S = 0.1076$, or 10.76%

d.
The WACC with 20 percent debt is:

WACC = $(S / V)r_S + (B / V)r_B(1 - t_C)$
WACC = 0.80(0.0929) + 0.20(0.072)(1 – 0.35)
WACC = 0.0837, or 8.37%

And the WACC with 60 percent debt is:

WACC = $(S / V)r_S + (B / V)r_B(1 - t_C)$
WACC = 0.40(0.1076) + 0.60(0.072)(1 – 0.35)
WACC = 0.0711, or 7.11%

Midterm 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. $WACC = (E/V) \times R_E + (D/V) \times R_D \times (1 - T_C)$

4. $Yield = \dfrac{Coupon + \left[(FV - \text{Price}) / Maturity \right]}{\left[(FV + \text{Price}) / 2 \right]}$

5. $NPV = -\left[PQ + v'(Q' - Q) + (v' - v)Q \right] + \dfrac{\left| Incrementalcashflow \right|}{R}$

6. *APR = periodic rate* 365/ (net period – discount period)*

7. *EAR* = (1 + *(periodic rate))* <u>*to the power*</u> *[(365/ (net period-discount period)]* - 1

<u>SHORT-TERM SOLVENCY RATIOS</u>

Current ratio = Current assets ÷ Current liabilities

Quick ratio = (Current assets - Inventory) ÷ Current liabilities

<u>ACTIVITY RATIOS</u>

Total asset turnover = Total operating revenues ÷ Average total assets

Receivables turnover = Total operating revenues ÷ Average receivables

Average collection period = Days in period ÷ Receivables turnover

Inventory turnover = Cost of goods sold ÷ Average inventory

Days in inventory = Days in period ÷ Inventory turnover

<u>FINANCIAL LEVERAGE RATIOS</u>

Debt ratio = Total debt ÷ Total assets

Debt-equity ratio = Total debt ÷ Total equity

Equity multiplier = Total assets ÷ Total equity

Interest coverage = Earnings before interest and taxes ÷ Interest

<u>PROFITABILITY RATIOS</u>

Net profit margin = Net income ÷ Total operating revenue

Gross profit margin = Earnings before interest and taxes ÷ Total operating revenues

Net return on assets = Net Income ÷ Average Total Assets

Gross return on assets = Earnings before interest and taxes ÷ Average total assets

Net[Gross] Return on assets (ROA) = Net[Gross] Profit margin x Asset Turnover

Return on equity (ROE) = Net income ÷ Average stockholders' equity

Payout ratio = Cash dividends ÷ Net Income

Retention ratio= Retained earnings ÷ Net Income = 1 – Payout ratio

<u>MARKET VALUE RATIOS</u>

Price-to-earnings (P/E) ratio = Market price per share ÷ Earnings per share

Dividend yield = Dividend per share ÷ Market price per share

Market-to-book (M/V) ratio = Market price per share ÷ Book value per share

Tobin's Q ratio = (Market value of debt + equity) ÷ Replacement value of total assets

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