Session 13: Post Class tests

1. Alfred Inc. is a publicly traded sporting goods company. The company has $250 million in book value of debt, reported interest expenses of $12.5 million in the most recent year and has an average maturity of 5 years for the debt. The pre-tax cost of debt for the firm is currently 4%. What is your best estimate of the market value of debt outstanding at the firm? (You can assume annual interest payments and a marginal tax rate of 40%)
   a. $261.12 million
   b. $250.00 million
   c. $280.29 million
   d. $243.01 million
   e. $156.68 million

2. Jack’s Stores is a retail firm with no conventional debt. It does have operating lease commitments of $12 million each year for the next 8 years. Jack’s Stores pre-tax cost of debt is 5%, its cost of capital is 9% and the marginal tax rate is 40%. What is the debt value of operating leases? (The risk free rate is 3%)
   a. $96.00 million
   b. $84.24 million
   c. $77.56 million
   d. $66.42 million
   e. None of the above

3. Faraday Enterprises is a publicly traded company. It currently has 10 million shares trading at $12/share and $150 million in book value of equity. The firm also has book value of debt of $75 million and market value of debt of $80 million. The cost of equity for the company is 9%, the pre-tax cost of debt is 4% and the marginal tax rate is 40%. What is the cost of capital?
   a. 7.4%
   b. 7.0%
   c. 7.7%
   d. 6.36%
   e. None of the above

4. Lester Inc. has 5 million shares outstanding, trading at $20/share. The company has one convertible bond, with a face value of $100 million, a ten-year maturity and a coupon rate of 2%; the bond has a market value of $120 million. If the current cost of equity for the firm is 10% and the pre-tax cost of debt is 5%, what is the cost of capital for the firm? (The marginal tax rate is 40%)
   a. 5.20%
   b. 6.18%
   c. 7.55%
   d. 8.25%
   e. None of the above

5. JG Enterprises has 50 million shares, trading at $4 a share; the cost of equity is 12%. It has debt with a market value of $100 million and a pre-tax cost of debt of 6%. Finally the company has $100 million in market value of preferred stock; the preferred shares are trading at $80 a share, with an annual preferred
dividend of $6/share. If the marginal tax rate is 40%, estimate the cost of capital for the firm.
   a. 8.78%
   b. 8.03%
   c. 9.38%
   d. 9.90%
   e. None of the above
Session 13: Post class test solutions

1. **a. $261.12 million.** To compute the market value of the debt, discount the expected interest expenses and the principal on the debt at the pre-tax cost of debt
   - Market value of debt = \( 12.5 \times (1-1.04^{-5})/0.04+250/1.04^5 = $261.12 \) m
   - The first term is the present value of $12.5 million as an annuity for 5 years, discounted back at 4%. The second term is the present value of the face value of the debt at the end of year 5.

2. **c. $77.56 million.** The debt value of leases is the present value of the operating leases at the pre-tax cost of debt.
   - Debt value of leases = PV of annuity of $12 million @5% for 8 years = $77.56 million

3. **d. 6.6%.** The first step is to compute the market value weights of debt and equity
   - Debt to capital ratio = 80/(120+80) = 40%
   - Cost of capital = 9%(.6) + 4% (1-.4) (.4) = 6.36%

4. **c. 7.55%.** The first step is to decompose the convertible bond into its debt and equity components. To do this, value the convertible bond as if it were a straight bond by discounting the coupons and face value back at the pre-tax cost of debt:
   - Value of straight bond portion = $2 million (PV of annuity for 10 years @5%) + $100 million/1.05^{10} = $76.83 million
   - Value of conversion option = Market value of convertible – Straight bond value = $120 - $76.83 = $43.17 million
   - Overall value of equity = $143.17 million
   - Cost of capital = 10% (143.17/(143.17+76.83)) + 5% (1-.4) (76.83/(143.17+76.83)) = 7.55%

5. **a. 8.78%.** First, compute the preferred dividend yield, which is also the cost of preferred stock:
   - Preferred dividend yield = $6/80 = 7.5%
   - Cost of capital = 12%(200/400)+ 6%(1-.4)(100/400)+7.5%(100/400) = 8.78%