Session 22a: Post class test solutions

1. **d. 20%**. Set up the equation for the value of the levered firm
   Value of levered firm = Value of unlevered firm + Debt * Tax Rate – Probability of bankruptcy * Cost of bankruptcy
   700 + 400 = 100*10 + 400*.4 – Probability of bankruptcy (.3)(1000)
   Probability of bankruptcy = 60/300 = 20%
2. **b. $3,930 million**. The unlevered firm value can be obtained from the firm value by subtracting out the tax benefits of debt and adding back the expected bankruptcy costs (you will lose both when you have no debt)
   Value of levered firm = 3000 +1200
   Tax benefit = 1200*.4
   Expected cost of bankruptcy = .25*.20*4200 = $210
   Value of unlevered firm = 4200 – 480 + 210 = $3,930 million
3. **e. Sizzle Media is more dependent on movie making and has fewer physical assets than the typical media company**. The fact that the firm has less in physical assets increases agency costs associated with borrowing and thus will lead Sizzle Media to have less debt.
4. **a. 36%**. Plugging into the market regression:
   Optimal debt ratio = 0.4+0.25*0.3-0.15*0.1 - 0.2*0.5 = 0.36
5. **d. Borrow money gradually over time and take projects**. The company is not under immediate threat of takeover (Positive Jensen's alpha, Higher insider holdings) and has good projects. It can take its time borrowing and should take projects with the cash.