**NUMERICAL ANSWERS**

**Question 11**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Answer** | **YEAR 1** | **YEAR 2** | **YEAR 3** | **YEAR 4** | **YEAR 5** |
| Impact to FCF |  |  |  |  |  |

**Question 12**

|  |  |
| --- | --- |
| **Interest Paid** |  |

**Question 13**

|  |  |
| --- | --- |
| **NPV** |  |
| **IRR** |  |
| **Yes/No?** |  |

**Question 14**

|  |  |
| --- | --- |
| **WACC** |  |

**Question 15**

|  |  |
| --- | --- |
| **Pre-Tax Gain/(Loss)** |  |

**Question 16**

|  |  |
| --- | --- |
| **Pre-Tax Cash with participation rights** |  |
| **Pre-Tax Cash without participation rights** |  |

**Question 17**

|  |  |
| --- | --- |
| **NPV** |  |

**Question 18**

|  |  |
| --- | --- |
| **Revenue Multiple** |  |
| **Gross Profit Multiple** |  |
| **EBITDA Multiple** |  |

**Question 19**

|  |  |  |  |
| --- | --- | --- | --- |
| **Answer** | **Year 1** | **Year 2** | **Year 3** |
| Free Cash Flows |  |  |  |

**Question 20**

|  |  |
| --- | --- |
| **Project 1 NPV (1 point)** |  |
| **Project 1 IRR (1 point)** |  |
| **Project 2 NPV (1 point)** |  |
| **Project 2 IRR (1 point)** |  |
| **Your Recommendation and explanation (1 point)** |  |

1. **In 2016 Nike discontinued making golf balls and golf clubs. However, as a result of the COVID 19 pandemic, golf exploded as one of the most popular sports in America and Titleist, the leading brand in golf balls, has expanded its market share to almost 40% over the past few years. Nike is now considering getting back into the golf ball business, but recognizes that this is no longer a core competency of the company and perhaps a riskier product to sustain than it once was. You are part of the team responsible for evaluating the decision. Your finance team provides you with the following information.**

|  |  |
| --- | --- |
| **Nike’s Borrowing Rate** | **4.0%** |
| **Titleist’s WACC** | **8.5%** |
| **Nike’s WACC** | **10%** |

**Assuming Nike considers entering the golf ball market again, what would be the appropriate discount rate to use when preparing an NPV analysis? Should Nike consider using a higher discount rate than those provided? Why or why not? Explain your answer (5 points).**

1. **Provide 3 reason as to why a business with positive Net Income may run out of cash? Explain (5 points)**
2. **Your company is currently looking to select 2 out of 5 projects to invest in. Your department head presents all projects ranked by their IRR and present no additional financial information.**

|  |  |
| --- | --- |
| **PROJECTS** | **IRR** |
| **Project 1** | **12%** |
| **Project 2** | **11%** |
| **Project 3** | **10%** |
| **Project 4** | **9%** |
| **Project 5** | **8%** |

**The department head argues that the company should move forward with the 2 projects with the highest IRR. List 3 additional FINANCIAL data points you would like to review and understand before deciding which project or projects to select? And please explain why these 3 data points are relevant financial information to obtain. (5 points)**

1. **Assuming beta and the risk-free rate remain unchanged, if a company that has no debt and a WACC of 10%, borrows $200M of long-term debt at 5%, would its WACC go up, down or remain unchanged? What would be 1 pro and 1 con of moving forward with this decision to borrow money? (5 points)**
2. **Fast Iguana had a great year. It grew its revenues by 20% while maintaining its Gross Profit Margin (GPM) at 22%. Fast Iguana reported Net Income of $95M.**

**You are the CFO of Fast Iguana and your financial analyst presented you a revenue based multiples analysis using your competitor’s publicly available financial data.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Company** | **YOY Revenue Growth** | **Revenues (in millions)** | **Valuation (in millions)** | **Revenue Multiple** | **GPM** | **Net Income (in millions)** |
| Slow Iguana | 80% | $100 | $300 | 3.00 | 50% | $(1) |
| Flying Squirrel | 50% | $250 | $850 | 3.40 | 55% | $58 |
| Bug Tracker | 25% | $1,000 | $2,500 | 2.50 | 40% | $100 |
| Athletic Earth | 35% | $50 | $75 | 1.50 | 30% | $10 |
| Hatched | 20% | $300 | $200 | 0.67 | 5% | $1 |
| **Total** |  | **$1,700** | **$3,925** | **2.31** |  |  |

**Fast Iguana’s Valuation:**

**$700 million in revenues x 2.31 industry average revenue multiple = $1,617 million**

**Based ONLY on the information provided above, describe 2 reasons that would support a higher valuation for Fast Iguana AND 2 reasons that would support a lower valuation for Fast Iguana? (HINT: No points will be awarded for explanations involving a different way to calculate the Average Revenue Multiple) (5 points).**

1. **You are looking to retire in 20 years. You want to build a model that determines how much money you will need put aside monthly so that you can retire comfortably. Your friend who claims to be an expert financial planner tells you that you this is easy math and provides you with the following analysis:**

|  |  |
| --- | --- |
| 1. **$10,000 in current monthly expenses x 12 =** | **$120,000** |
| 1. **Expected Numbers of Years in Retirement =** | **40** |
| **(C = A x B) Money Needed at Retirement =** | **$4,800,000** |
| **(C ÷ 20 Years of Savings) Annual Savings Required =** | **$240,000** |

**Provide 3 key assumptions your friend missed in the analysis. (5 points)**

1. **You are leading the development and launch of a new product. Before you can begin development, you must present a financial forecast to management. However, you are competing against another product launch and due to resource constraints management will only select one of the two products. Your company has a policy of approving products with the following characteristics:**
   1. **Year 2 revenue must be greater than $1M**
   2. **Initial cash investment must be returned within 3 years**
   3. **Impact to other divisions or products (i.e. revenues or costs) are ignored**

**You believe your product is incredibly strategic as it allows for your company to enter a new and developing market which you expect will turn into a better long-term opportunity for your company. This means, it will take 5 years to get to $1M in revenues. Further, the company’s initial cash investment will not be recovered until year 8. And because the product is in a brand-new market, there is no know-how to leverage, but at least it does not cannibalize revenues from other existing company products (which may be the case with the other product). What are 3 financial arguments you make to management when you present your product that may put your project at advantage to be selected? (5 points)**

1. **You work for a privately held company and have options that are fully vested. The company was just acquired for $1 billion. Prior to the business being acquired, it had successfully completed 3 rounds of financing from reputable Venture Capital and Private Equity investors. There are a total of 1 million shares outstanding at the time of the sale. You hold 100 fully vested options. Did you just make $100,000 before taxes ($1 billion ÷ 1 million shares x 100 options = $100,000)? Why or why not? Name 2 additional data points you would need to understand to determine how much your options are worth to you (pre-tax). (5 points)**
2. **Your team must choose one of two projects with identical risk. The table below shows your team’s final FCF and NPV analysis:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Year 0** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** |
| **Project 1** | |  |  |  |  |  |  |
|  | FCF | $(1,000) | $(500) | $1,000 | $2,000 | $3,000 | $4,000 |
|  | NPV | $5,407 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Project 2** | |  |  |  |  |  |  |
|  | FCF | $(800) | $(200) | $500 | $700 | $900 | $1,000 |
|  | NPV | $1,193 |  |  |  |  |  |

**Both projects have an expected duration of 5 years (meaning, no additional benefit can be captured past year 5). Further, the data and assumptions have been verified and approved by your finance team. NPV is being calculated using the discount rate approved by your company and all calculations are completely accurate.**

**As the leader of the team, you present your analysis to the company’s CFO explaining that your team will be moving forward with project 1, which has the higher NPV. To your surprise, your CFO approves project 2. Your CFO completely understands time value of money and completely agrees with your calculations. What would be a logical explanation for your CFO to approve project 2 instead of project 1?**

1. **You just got promoted to CEO. Your first order of business is to go acquire a competitor who is rapidly gaining market-share in the Seattle market. Seattle’s market is a rapidly growing market for your company’s product and this acquisition is the fastest way to take advantage of this opportunity. You sit down with your CFO and begin discussing how to build a 10-year financial model that will help you determine whether or not this is a good decision and also guide you through how much you are willing to pay for your competitor. Name 5 key assumptions you will address when building this forward-looking financial model. (5points)**
2. **You are building a 5 year financial model for one of your clients, Lou Malnati’s Pizza, who is trying to estimate cash-flows over the next 5 years. Your model is only missing estimating cash-flows associated with changes in net working capital (“NWC”). After discussions with your client, you estimate that NWC is best estimated as 25% of revenues, which are estimated to be $3 million, $5.5 million, $4 million, $6 million and $5 million over the next 5 years. What is the impact to free cash flows in years 1 through 5 from changes in NWC if your starting NWC balance (Year 0) is $600,000? Please don’t round answers and please use the appropriate plus or minus signs. (5 points)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ANSWER | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 |
| **CASHFLOWS** |  |  |  |  |  |

**Support:**

1. **You just bought a house for $1,500,000 and put 20% as a down-payment. The bank is lending you money at a 6% annual rate over 15 years to be paid monthly. Assuming you make all payments on time, how much money will you have paid in interest after 30 years? (5 points)**

|  |  |
| --- | --- |
| **ANSWER** |  |

**Support:**

1. **CBRE is evaluating the purchase of a building. The building would cost $300 million upfront and would operate for 10 years at which point CBRE expects to sell the building for $500 million in cash. Also, after 5 years, CBRE expects to spend an additional $100 million in cash for repairs and maintenance. CBRE’s cost of capital is 10% and cash flows are as follows:**

**Today = $300 million Investment**

**Year 1 (i.e. 1 year after purchase) = $80 million cash inflows**

**Year 2 = $50 million cash inflows**

**Year 3 = $75 million cash inflows**

**Year 4 = $50 million cash inflows**

**Year 5 = $35 million cash inflows and $250 million in cash outflows for maintenance**

**Year 6 = $40million cash inflows**

**Year 7 = $40 million cash inflows**

**Year 8 = $40 million cash inflows**

**Year 9 = $40 million cash inflows**

**Year 10 = $40 million cash inflows**

**Year 10 = Sale of building for $300 million**

1. **What is CBRE’s NPV on this project? (2 points)**

|  |  |
| --- | --- |
| ANSWER |  |

**Support:**

1. **What is CBRE’s IRR on this project? Please provide 2 decimal (e.g. 25.35%)? (2 points)**

|  |  |
| --- | --- |
| ANSWER |  |

**Support:**

1. **Should CBRE take on this project? Yes/No? Why? Please explain. (1 point)**
2. **Tesla has 3 billion shares outstanding trading for $200 per share. In addition, Tesla has $8 billion in long term debt and an additional $2 billion in short-term debt, at an average borrowing rate of 6%. Tesla Beta is 2.4 and its corporate tax rate is 15%. Assuming the risk-free rate is 4% and a historical market premium of 8%, what is Tesla’s WACC (please include 2 decimals)? (5 points)**

|  |  |
| --- | --- |
| **ANSWER** |  |

**Support:**

1. **Apple Inc. (NASDAQ: APPL) has a market cap of over $2,600 billion. You believe that the stock price will continue to increase. As a result, you buy 10,000 call options for $20,000 on Apple’s stock at a strike price of $160 per share. What would be your pre-tax gain/loss (inclusive of the price to buy the options) if the price of the stock is $185 per share when your options expire? (5 points)**

|  |  |
| --- | --- |
| Pre-Tax Gain/(Loss) |  |

**Support:**

1. **You currently hold 2,700 shares of common stock in HatchRight, who was just acquired for $350,000,000. There are a total of 3,000,000 shares outstanding (inclusive of common stock, options and preferred shares) when the transaction closes. Three years ago, HatchRight raised $50,000,000 at a $135,000,000 pre-money valuation. The money came with a 1x liquidation preference with participation rights. How much money (pre-tax) will you receive from this transaction? And how much money would you receive (pre-tax) had there been no participation rights? (5 points)**

|  |  |
| --- | --- |
| Pre-tax cash with participation rights |  |
| Pre-tax cash without participation rights |  |

**Support:**

1. **You are preparing a financial model to evaluate the launch of a new product. You need to make a $3MM cash investment today to get this project off the ground. After that, your cash flows are estimated to be positive $1MM in year one and growing at 20% per year through year 5. In year 6 you expect your cash-flows to grow 15% and after that decrease at 3% per year in perpetuity. Using a 10% discount rate, what is the NPV of this new product (inclusive of the initial $3MM cash investment)? (5 points)**

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| --- | --- |
| ANSWER |  |

**Support:**

1. **Fast Iguana is looking to raise money at a $200MM valuation. Fast Iguana’s revenues, gross profit and EBITDA are $50 million, $40 million and $2 million, respectively. What are Fast Iguana’s revenue, gross profit and EBITDA multiples (provide 2 decimals)? (5 points)**

|  |  |
| --- | --- |
| **Revenue Multiple** |  |
| **Gross Profit Multiple** |  |
| **EBITDA Multiple** |  |

**Support:**

1. **You are forecasting cash flows for a new investment opportunity. Below is a table showing relevant net working capital, depreciation and net income information to estimate your free cash flows. When reviewing your forecasts, you noticed that you had mistakenly forgotten to account for 2 things:**
   1. **CAPEX was not included in your calculations. Specifically, in 3 years, you expect to sell equipment, which you will purchase in year 1 (not today) for $500,000. The incremental depreciation expense (as in incremental depreciation expense to that shown in table below) for this equipment will be $150,000 ($50,000 in depreciation expense per year in years 1, 2 and 3) when sold. You expect to sell it for $400,000.**
   2. **You underestimated revenues by $3 million in year 3 and as a result 50% of pre-tax expenses associated with those revenues. Also, you expect Accounts Receivable to increase 20% in year 3 as a result of this adjustment.**

**Your tax rate for this project is 40%. What are your free cash flows for years 1, 2 and 3? (5 points)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Today** | **Year 1** | **Year 2** | **Year 3** |
| Accounts Receivable | $350,000 | $375,000 | $200,000 | $500,000 |
| Inventory | $100,000 | $50,000 | $75,000 | $50,000 |
| Accounts Payable | $400,000 | $500,000 | $350,000 | $400,000 |
| Depreciation Expense | $200,000 | $210,000 | $225,000 | $250,000 |
| Net Income | $500,000 | $600,000 | $700,000 | $700,000 |

|  |  |  |  |
| --- | --- | --- | --- |
| **ANSWER** | **Year 1** | **Year 2** | **Year 3** |
| Free Cash Flows |  |  |  |

**Support:**

1. **Two of your best project managers are fighting over budget dollars for their specific projects. You can invest up to $2 million, which means you can only pick one of the two proposed projects. Your company’s required rate of return and WACC is 20%. Your company uses IRR as its main decision-making financial tool. The 2 projects you are evaluating have the following free cash flows (“FCF”):**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Project 1** | **Year 0** | **Year 1** | **Year 2** | **Year 3** | **Year 4** |
| Investment | $(1,100,000) | $0 | $0 | $0 | $0 |
| Other FCF | $0 | $300,000 | $2,000,000 | $600,000 | $1,000,000 |
| Total FCF | $(1,100,000) | $300,000 | $2,000,000 | $600,000 | $1,000,000 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Project 2** | **Year 0** | **Year 1** | **Year 2** | **Year 3** | **Year 4** |
| Investment | $(2,000,000) | $0 | $0 | $0 | $0 |
| Other FCF | $0 | $500,000 | $2,000,000 | $600,000 | $2,000,000 |
| Total FCF | $(2,000,000) | $500,000 | $2,000,000 | $600,000 | $2,000,000 |

**If project 1 is selected, the remaining $900,000 will be invested immediately (Year 0) in a Bond that will pay the company $1,366,263.37 by the end of Year 4 (an 11% IRR). You are responsible for presenting the results to the investment committee. You provide the investment committee with the NPV and IRR for both projects. What is your recommendation on what project to pick and why? (5 points)**

|  |  |
| --- | --- |
| **Project 1 NPV (1 point)** |  |
| **Project 1 IRR (1 point)** |  |
| **Project 2 NPV (1 point)** |  |
| **Project 2 IRR (1 point)** |  |
| **Your Recommendation and explanation (1 point)** |  |

**Support:**