

## 1 Basic Information

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MBA(Finance) MS (Data Analyst) 3.5/4.0

University of Bridgeport Degree; Bachelor, Master

6 (Analysts Only) Skills desired. List & explain your skills

I can do financial modeling and Business Valuation modeling, Basic Accounting Excel. Understanding the SEC filling.

7 Programming Logic

1) Answer is e

e) If an array has  $n$  elements, it swaps the element in position 0 with the element in position  $n-1$ , swaps the element in position 1 with the element in position  $n-2$ , etc.

2) Answer f

f) It would return [2, 3, 1, 4]

[4] Logic 1. There are 4 shut doors in front of you. You know that each door has an animal painted on one side and a plant painted on the other side. The four doors have the following painted on the sides that you can see (one per door): a lily, a pine tree, a fox, and an eagle. You have been told that these doors satisfy the rule "if a door has a flower on its plant side, then it has a bird on its animal side". Which is the smallest set of doors that you must check the hidden side of to determine conclusively whether this rule is true or false for these doors?

**Answer** The door painted with lily

2. Suppose that in a group of people you find that  $X$  percent of people in the group have heights that are greater than the average (that is, the mean) height in that group. Which of the following is a true statement about  $X$ ? a)  $X$  can be any percentage. b)  $X$  cannot be bigger than 25%. c)  $X$  can be bigger than 25% but cannot be bigger than 50%. **d)  $X$  can be bigger than 50% but cannot be as high as 99.9%.** e)  $X$  can be bigger than 99.9% but cannot be equal to 100%.

### Chooseing d

3. Suppose that you are at a casino playing roulette. The strategy you are using is to, before each bet, flip a coin to determine whether to place your bet on red or on black (which, according to the rules of the game, should each have almost a 50% chance of occurring). After you've placed each bet, the roulette wheel is then spun. Suppose that you lose 59 times in a row (i.e. for 59 consecutive plays, when you place your bet on black the ball then lands on red, and when you place your bet on red the ball then lands on black). From this experience, it is most rational to conclude that: a) Using a coin toss to determine whether to bet on red or black is in general a very bad strategy for playing roulette b) The game is somehow rigged against you and the casino or its employees are cheating you c) You are very likely to win on your next bet if you continue this coin flip based strategy d) The roulette game is broken, but there is no reason to assume that it was broken intentionally e) You were merely very unlucky f) **One cannot reasonably conclude which of the above options is more likely**

### Choosing f

4 Suppose that you have an enormous grapefruit that is 92% water (by weight). The grapefruit weights 100 pounds. If the water content of the grapefruit evaporates until it is 90% water (by weight), then approximately how much does the grapefruit now weigh? a) 92 pounds b) **90 pounds** c) 82pounds d) 80 pounds e) 72 pounds f) 70 pounds

### Choosing b

#### [5] Risk

Consider a purely probabilistic game that you have the opportunity to play. Each time you play there are  $n$  potential known outcomes  $x_1, x_2, \dots, x_n$  (each of which is a specified gain or loss of dollars according to whether  $x_i$  is positive or negative). These outcomes  $x_1, x_2, \dots, x_n$  occur with the known probabilities  $p_1, p_2, \dots, p_n$  respectively (where  $p_1 + p_2 + \dots + p_n = 1.0$  and  $0 \leq p_i \leq 1$  for each  $i$ ). Furthermore, assume that each play of the game takes up one hour of your time, and that only you can play the game (you can't hire someone to play for you). Let  $E$  be the game's expected value and  $S$  be the game's standard deviation

1. In the real world, should a rational player always play this game

whenever the expected value  $E$  is not negative? Why or why not?

**Answer:** It depends on the player's risk preference. If he prefers more risk with adequate money. He probably plays the game. Cause even the expected value is negative, not meaning he gonna lose every games. If players are risk averse, he will not play the games.

2 Does the standard deviation  $S$  do a good job of capturing how risky this game is? Why or why not?

**Answer** Yes, Standard Deviation is a good way to measure the risky of the game.

The smaller the standard deviation, the less risky of the game losing. The bigger standard deviation, the more volatile and risky to lose the games.

2. If YOU PERSONALLY had to decide whether or not to play this game, how would you decide?

**Answer**

Seeing the Probability of win and lose, also how much it gonna lose and win. Calculating the Expected Value and Standard deviation. Based on the numbers to make an decision playing or not.

[6] Quick Business Analysis (Analysts Only) For the following company, (ATHX) How much cash do they have on hand? Will they need to raise cash in the next year and if so when and how much? The analysis needs not be thorough or complete - just get the data and explain what you would look at.

**Answer**

From Yahoo Finance, ATHX COMPANY has cash on hand over \$51095000.

[7] Accounting (Analysts Only) What is the difference between a business expense, an asset acquisition, and a payment? Give a simple example of each showing how they would be reported on the income statement or balance sheet

**Answer:**

Business Expense means Cost incurred to generate the revenue or the core business activities.

An Asset acquisition means purchasing of a company by buying its assets instead of its stocks.

Payment is a disbursement of money. For example, customers pay for product or services. Companies pay for suppliers, employee etc.

[8] Valuation (Analysts Only) For the current year, company XYZ earned EBITDA of \$350M. Their depreciation/amortization expense was \$125M, interest expense was \$75M, and tax rate was 21%. Their current market cap is \$1,350M. For the following year, company XYZ has given EBITDA guidance of \$550M. Their depreciation/amortization expense, interest expense, and tax rate will remain the same.

1. Show your steps in calculating net income for the current year and the trailing P/E ratio.

Answer:

EBITDA	\$350
<u>-D&amp;A</u>	<u>\$125</u>
EBIT	\$225
<u>-Interest</u>	<u>\$75</u>
EBT	\$150
<u>-Tax</u>	<u>10.5 (21%*50)</u>
NET income	\$39.5 Million

$$\text{PE Ratio} = \text{Market Cap} / \text{total EBITDA} = 1350/350 = 3.86$$

2 Show your steps in calculating net income for the following year and the forward P/E ratio.

Answer

EBITDA	\$550
<u>-D&amp;A</u>	<u>\$125</u>
EBIT	\$425
<u>-Interest</u>	<u>\$75</u>
EBT	\$350
<u>-Tax</u>	<u>52.5 (21%*250)</u>
NET income	\$197.5 Million

$$\text{Forward PE Ratio} = \text{Market Cap} / \text{future EBITDA} = 1350/550 = 2.45$$

3. What rate of return does the forward P/E ratio from question 2 correspond to?

$$550 = 350(1+r) \quad r = 0.57$$

4. A few items from company ABC's current balance sheet are shown below. Project the balance sheet 12 months from now assuming the following: FCF will be zero for the next 12 months, their long-term debt does not mature for another 5 years, their annual depreciation and amortization expense is \$125M, and they utilize the straight-line method of depreciation. ASSETS Cash \$300M Property, plant, and equipment \$1,000M Accumulated depreciation, depletion, and amortization \$250M Net property, plant, and equipment \$750M LIABILITIES Current maturities of long-term debt \$200M Long-term debt (net of current maturities) \$600M

<b>Balance Sheet</b>		
	<b>Y1</b>	<b>Y2</b>
<b>\$ in Millions</b>	<b>Actual</b>	<b>Forecast</b>
PP&E	1,000	1,000
Accumulated depreciation, depletion, and amortization	250	375
Net property, plant, and equipment	750	625
Cash and equivalents	300	300
<b>Total Assets</b>	<b>1,050</b>	<b>925</b>
Current maturities of long-term debt	200	-
Long-term debt (net of current maturities)	600	400
<b>Total Liabilities</b>	<b>800</b>	<b>400</b>

[9] Other 1. Suggest a question that might be added to this questionnaire that would be helpful in evaluating candidates (either analysts, programmers, or both) and explain why. Also supply the correct answer and if this is a multiple-choice question, a list of possible answers. 2. If you feel that any of the questions in this questionnaire are unreasonable, ambiguous or poorly worded, please tell us which ones. We appreciate your feedback, but this is entirely optional.