Midterm exam #1

Investments (FIN 323), Fall 2023

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Please print your name on the line below:

_____Answer key_____

- This test has 25 questions. Each question counts for one point .
- You have 75 minutes to take the test. (3 minutes per question.)
- There are 15 multiple choice questions. These have only one answer. Mark your answer clearly in the box next to the question.
- There are 10 free-answer questions. **Their answer is always a number, a dollar amount, or a percentage return or growth rate.** Write your answer in the line under the question. I will only grade the answer, not the calculations that you did.
- You can bring one page of notes, front and back.
- You should bring a calculator, but it should not have wireless capability.

I. Stock returns, portfolios, and indexes

For the questions in this section, use the table below, which describes the share prices, share counts, and dividend payments of three stocks during a year.

Symbol	Starting share count	Ending share count	Starting share price	Dividend per share, paid during the year	Ending share price
ABC	10m	10m	$10	$3	$14
QRS	5m	10m	$20	$0	$25
XYZ	16m	16m	$25	$0	$35

Question 1: What was the dividend yield of stock ABC (as a percentage)?

30%

Question 2: What was the capital gain of stock QRS (as a percentage)?

25%

Question 3: What was the return on a **value-weighted index** of just ABC and XYZ? Assume that the index is calculated like our examples from class and homework.

40%

Question 4: What was the total return on a **value-weighted portfolio** of QRS and XYZ?

37%

Question 5: At the end of the year, what type of activity will be necessary to rebalance the value-weighted portfolio of QRS and XYZ from the previous question?

- ☐ A) Shifting the portfolio allocation away from QRS, towards XYZ.
- ☐ B) Shifting the portfolio allocation away from XYZ, towards QRS.
- ☐ C) Reinvesting dividends into both stocks.
- ☐ D) No rebalancing will be required.

Question 6: What is the total return on an **equal-weighted portfolio** of all three stocks?

45%

Question 7: Suppose the divisor of a **value-weighted index** of **all three stocks** is equal to 100 at the start of the year. What will the divisor be at the end of the year? (Round to the nearest whole number.)

- ☐ A) 100
- ☐ B) 115
- ☐ C) 158
- ☐ D) 164

Question 8: Which of the following is true of **both** the S&P 500 index and the Bloomberg "Agg" index?

- ☐ A) They both track the stock market.
- ☐ B) They both track just the capital gains from their underlying portfolios.
- ☐ C) They are both value-weighted indexes.
- ☐ D) None of the above is true of both indexes.

II. Funds

Here again is the data from the previous section. Use it for the next three questions.

Symbol	Starting share count	Ending share count	Starting share price	Dividend per share, paid during the year	Ending share price
ABC	10m	10m	$10	$3	$14
QRS	5m	10m	$20	$0	$25
XYZ	16m	16m	$25	$0	$35

Suppose that at the start of the year, you set up an **open-end fund** (mutual fund). You sell 1 million shares of the fund to investors in exchange for $55 million in cash, then you use that cash to buy 1 million shares of each of the three stocks above. At the end of the year, you distribute to your investors all dividends that you have received.

Question 9: What is your fund's NAV (per share) at the **start** of the year?

$55

Question 10: What is the NAV (per share) at the **end** of the year (after the distribution)?

$74

Question 11: What total return (as a percent) did your fund's investors earn this year?

40%

Question 12: What is a major challenge that a closed-end fund would face if it tried to track an index, that does **not** apply to a mutual fund (open-end fund)?

- ☐ A) The fund's share price might unexpectedly deviate from the index.
- ☐ B) The fund's NAV might unexpectedly deviate from the index.
- ☐ C) The fund cannot easily rebalance its holdings.
- ☐ D) Investors cannot easily sell their shares of the fund during trading hours.

Question 13: Suppose an ETF has 10m shares outstanding, its portfolio consists of 10m shares of MSFT, and it has no other assets or liabilities. Suppose MSFT shares trade for $301, and ETF shares trade for $300. An authorized participant (AP) purchases 10,000 ETF shares and redeems them to the fund. What will the AP receive from the fund?

- ☐ A) Shares of MSFT worth $3 million.
- ☐ B) Shares of MSFT worth $3.01 million.
- ☐ C) $3 million in cash.
- ☐ D) $3.01 million in cash.

Question 14: Why do most ETFs publicly advertise their portfolio holdings at all times?

- ☐ A) To comply with regulatory requirements.
- ☐ B) To help retail investors research the fund's performance.
- ☐ C) To help retail investors build a portfolio that resembles the fund's portfolio.
- ☐ D) To help APs build a portfolio that resembles the fund's portfolio.

Question 15: Suppose you own shares of a mutual fund, which in turn owns shares of a large company. One morning at 10:30, you find out negative news about the company that will be released publicly at noon and cause its share price to fall. Would you benefit from placing an order to sell your fund shares before noon? Why or why not?

- ☐ A) **Yes**: The fund will give you cash equal to yesterday's (higher) closing price.
- ☐ B) **Yes**: The fund will give you shares that you can sell before the price falls.
- ☐ C) **No**: The fund will give you cash equal to today's (lower) closing price.
- ☐ D) **No**: The fund will give you shares, but you are not allowed to sell them.

Question 16: All funds make regular distributions to investors of any income they have realized on their investments, such as the capital gains from selling securities. Why?

- ☐ A) To reduce tracking error with their indexes.
- ☐ B) To avoid forcing their investors to realize tax events.
- ☐ C) To meet investor demand for high rates of cash payout.
- ☐ D) To qualify for exemption from corporate income tax.

III. Valuation, security analysis, value investing

Question 17: A *large-cap growth* strategy tries to invest in growth stocks with a large market capitalization. Which of these stocks would be *most* attractive to this strategy?

	Company	Share price	Shares outstanding	Book value of equity
☐ A)	A	$1.00	10 billion	$1 billion
☐ B)	B	$2.00	5 billion	$2 billion
☐ C)	C	$4.00	5 billion	$2 billion
☐ D)	D	$5.00	4 billion	$4 billion

Question 18: You forecast a stock will pay a dividend of $1 per share next year, and this dividend will then grow at a rate of 2% per year thereafter. If the equity cost of capital is 12% per year, what is the stock's intrinsic value under the dividend discount model?

$10

Question 19: A company has 1 billion shares outstanding, a share price of $5, and an equity cost of capital of 12%. The market's consensus forecast of next year's free cash flow to equity (FCFE) is $100 million. If the company's stock price matches its FCFE valuation, then, what growth rate (as a percent) must the market expect for the FCFEs?

10%

Question 20: Suppose a corporation issues a 10-year bond with a yield to maturity of 10%. An analyst forecasts that the expected average return of the stock market is 8% per year over the next 10 years, and concludes that the bond is expected to deliver greater average returns than the stock market. Why is this conclusion incorrect?

☐ A) The expected rate of return for a risky bond is less than its yield.
☐ B) The expected rate of return for a risky bond is greater than its yield.
☐ C) A high yield to maturity indicates a high price.
☐ D) A high yield to maturity indicates a low price.

IV. Mutual fund performance and passive investing

Question 21: Why is it *impossible* for every investor to use an equal-weighted strategy?

☐ A) This would be incompatible with the total available supply of each stock.
☐ B) The equal-weighted strategy has too much risk for the average investor.
☐ C) The equal-weighted strategy's return is too low for the average investor.
☐ D) Mutual funds are not allowed to track an equal-weighted index.

Question 22: Imagine everyone invested only in equity mutual funds. In a typical year, what would we expect about the average return of these funds (weighted by assets under management), compared to the value-weighted total return on the stock market?

- ☐ A) The average fund return will be **similar** to the stock market return, though slightly lower due to the fees charged by the mutual funds.
- ☐ B) The average fund return will be **lower than** the stock market return, **even ignoring fees**, because mutual fund managers make bad decisions.
- ☐ C) The average fund return will be **higher than** the stock market, because there are many mutual funds that will beat the market.
- ☐ D) The average **passive** fund will roughly match the market, but the average **active** fund will do much better, even after fees.

Question 23: The RenTech Medallion fund outperformed the market by a large amount, many years in a row. Below are some facts about this fund (all are true). Which is the *best* explanation why it can deliver *persistent* performance, when mutual funds cannot? (Hint: Think about the "sympathetic" view of the evidence that we discussed in class.)

- ☐ A) The fund has a very long-term focus.
- ☐ B) The fund employs mainly scientists, not finance professionals.
- ☐ C) The fund has been closed to new investors since 1993.
- ☐ D) The fund's returns exhibit a very large degree of volatility.

Question 24: Suppose you calculate average returns over the past 20 years, for all actively-managed mutual funds that are at least 20 years old as of today. You will probably find that this average is significantly better than the market return. Why does this *not* imply that the average active fund beats the market over a 20-year horizon?

- ☐ A) Your data does not include the worst funds, because they have closed.
- ☐ B) The past 20 years was an unusually bad time for the market.
- ☐ C) The past 20 years was an unusually good time for actively-managed funds.
- ☐ D) Mutual fund fees have been trending upward over time.

Question 25: Approximately when did passive mutual funds become as big as actively-managed mutual funds in the US, in terms of their assets under management (AUM)?

- ☐ A) In the 1950s.
- ☐ B) In the 1970s.
- ☐ C) In the 1990s.
- ☐ D) Within the last five years.