

CMT LEVEL III
2020 Exam
Information and Samples

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Level III. The Integration of Technical Analysis

The following sample CMT Level III questions offer a glimpse into the style and scope of the exam. These samples are by no means a study guide; instead, consider them a taste of what a Level III candidate may be asked to show mastery of the body of knowledge.

Important points to note

- The CMT Level III exam tests the candidate's ability to integrate a wide range of concepts and tools into the application of technical analysis.
- The Level III exam is organized into sections, most of which weave together two or more knowledge domains as listed on page xii in the text. In turn, each of those sections contains from three to seven items requiring a response. Some items will be multiple choice; most will be short answer and require that you make a list, state and justify your analysis, or supply a similar written response.
- Candidates have four hours to complete the exam.
- The exam is delivered on a computer in Prometric testing facilities. Please be sure to schedule your exam well in advance.
- Questions on the Code of Ethics and Standards of Professional Conduct appear on all three levels of the CMT exams. The Standards of Practice Handbook is a valuable study guide for the Code and Standards. Please use those documents as ethics are not otherwise included in the CMT Program textbooks.
- The CMT Association maintains a discussion forum for CMT candidates. Candidates are encouraged to utilize this resource to discuss and clarify their understanding of the subject matter.

Managing the CMT Level III exam

- Supply the answer that the question calls for. Your grade will be based on answering the question, not on showing off or trying to distract the graders.
- Resist the temptation to over-answer. If the question asks for “three reasons,” then supply three reasons. You will not necessarily be penalized for supplying more but a) it takes time, and b) if additional information is incorrect it may show that you did not have mastery of the topic. Generally, time is better spent thinking and checking, rather than simply cramming more into the response.
- If you cannot fully answer a question, supply at least the part you know. That is, if the question calls for supplying “three reasons” but you can supply only two, then write those two reasons. Graders have leeway to grant partial credit.
- Spelling and grammar and sentence structure are NOT graded. Please do your best to communicate the information. The Association and the graders do not grade for presentation or style, and we know that English is not the first language for many candidates. We work to keep the language in the questions direct and consistent and it is best for you to do the same in your responses.
- The exam is marked on a scale of 240 points. The point value of each section and item is given. The point values are also meant to reflect the time it might take to supply an answer. That is, a section worth 30 points is estimated to require 30 minutes to complete. Of course, you may be faster or slower on various sections but the point values are still a useful guide in your time management.

Classical Methods, Risk Management, Volatility – 40 points

You are an investment adviser helping a client understand the construction of their portfolio. This client is interested in getting your technical perspective on two stocks: Facebook (FB) and ExxonMobil (XOM).

Examine the charts of both stocks. Each chart is a long-term daily candle chart with 50- and 200-day moving averages (blue and red, respectively), as well as the stock's relative strength versus the S&P 500.

Chart 1 - FB



Chart 2 - XOM



- Review charts 1 and 2 and identify which stock is the most attractive from a classical technical standpoint? (5 points)
 - Facebook
 - ExxonMobil
- Using the chart of the stock you selected in question 1, describe three pieces of technical evidence that justify your answer. (6 points)
- From a risk-management standpoint, think about how you would recommend entering this trade. Describe what buy condition and what stop loss appears warranted based on the chart. (6 points)
- Your client wants to risk no more than 2% of his \$100,000 portfolio on this trade. Assuming your client is determined to use a stop 7% below the stock's current price, calculate the maximum dollar value he should allocate to this first position (round to the nearest dollar). (8 points)

Rather than buy a single stock, your client has decided to invest his entire portfolio into both Facebook and ExxonMobil, equally weighted. You begin to tabulate the following data to help him understand and manage the investment risks involved:

| Stock | Mean (Expected Return) | Standard Deviation (σ) |
|-------|------------------------|---------------------------------|
| FB | 41.084 | 35 |
| XOM | 12.88 | 10.8 |

| | | |
|---------------------------|--------|--------|
| 50% FB/ 50% XOM Portfolio | 26.982 | 19.003 |
|---------------------------|--------|--------|

| Correlations | | |
|--------------|--------|--------|
| | FB | XOM |
| FB | 1.00 | 0.0979 |
| XOM | 0.0979 | 1.00 |

5. What does standard deviation (σ) represent in the table above? (3 points)
6. How is it different from popular indicators like the VIX? (6 points)
7. While the expected return of the 50/50 portfolio is simply the average of the expected return of the two stocks, the standard deviation doesn't keep that same relationship. Explain why not. (6 points)

Answers

1.

A. Facebook

2.

- Shares are testing new highs.
- Shares are above both moving averages.
- The 50-day moving average has crossed back above the 200-day moving average.
- Facebook just broke out of an inverse head and shoulders pattern.
- Shares have made a series of higher lows over the course of the chart.
- Facebook's long-term uptrend is still intact.
- Facebook's relative strength line is in an uptrend.
- Both moving averages are in an uptrend.

3.

It makes sense to either:

- Buy a breakout above Facebook's recent highs (at ~\$134)
- Or, wait for a retracement to trendline support.

Logical stops include:

- Violation of most recent swing low/uptrend at ~\$115.
- 200-day moving average

4.

$\$100,000 * 0.02 = \$2,000$ risk per position.

$\$2,000 \div 7\% \text{ stop loss} = \$28,571$ position size.

5.

Volatility of returns, or risk.

6.

Standard deviation is different from the VIX because it is a statistical measure of observed volatility, while the VIX Volatility Index is a statistical measure of implied volatility.

7.

Because the correlations between FB and XOM are low. The lower the correlations (and covariances), the greater the opportunity to reduce portfolio volatility – in this case, standard deviation. This is an example of the risk-reducing benefits of diversification.

Portfolio Management, Behavioral Finance, Asset Relationships - 25 points

A popular asset allocation newsletter, called Alpha-Edge, warns of the probability of a stock market bubble. In the article, the author offers the following advice: "Investors looking to reduce volatility and add downside protection should begin to shift equity holdings to more defensive assets, like fixed income and gold."

1. The newsletter is recommending going long bonds. Which type of inflation would likely cause the author's expected correlation of equities to bonds to be the least accurate? (2 points)
 - A. Deflation
 - B. Stagflation
 - C. Disinflation
 - D. Hyperinflation
2. Should the type of inflation in the prior question occur, and is forecast to last for a period greater than a year, would you recommend being LONG gold? Why or why not? Your answer must include two distinct points from the assigned readings. (7 points)
3. Examine Table 1 below. As part of its evidence, the Alpha-Edge newsletter calls attention to US corporate financials. Based on the trends in US corporate GDP and liabilities, what market stage are we likely in? (2 points)
 - A. Euphoria
 - B. Critical stage
 - C. Displacement
 - D. Credit creation

Table 1

| Period of Study | US Corporate Real GDP % Change from Preceding Quarter | US Corporate Liabilities % Change from Preceding Quarter |
|---------------------|---|--|
| Oct 2016 - Dec 2016 | 1.8 | 2.0 |
| Jan 2017 - Mar 2017 | 1.6 | 2.5 |
| Apr 2017 - Jun 2017 | 1.9 | 2.4 |
| Jul 2017 - Sep 2017 | 2.0 | 3.4 |
| Oct 2017 - Dec 2017 | 1.7 | 4.1 |

4. One of the main premises of the newsletter is that a buy and hold, value-oriented investing approach typically outperforms momentum trading strategies over the long run. Part of the author's rationale is due to the tax issues incurred from higher portfolio

turnover. Cite two specific reasons why momentum investing may not be as tax disadvantageous as the newsletter states. (4 points)

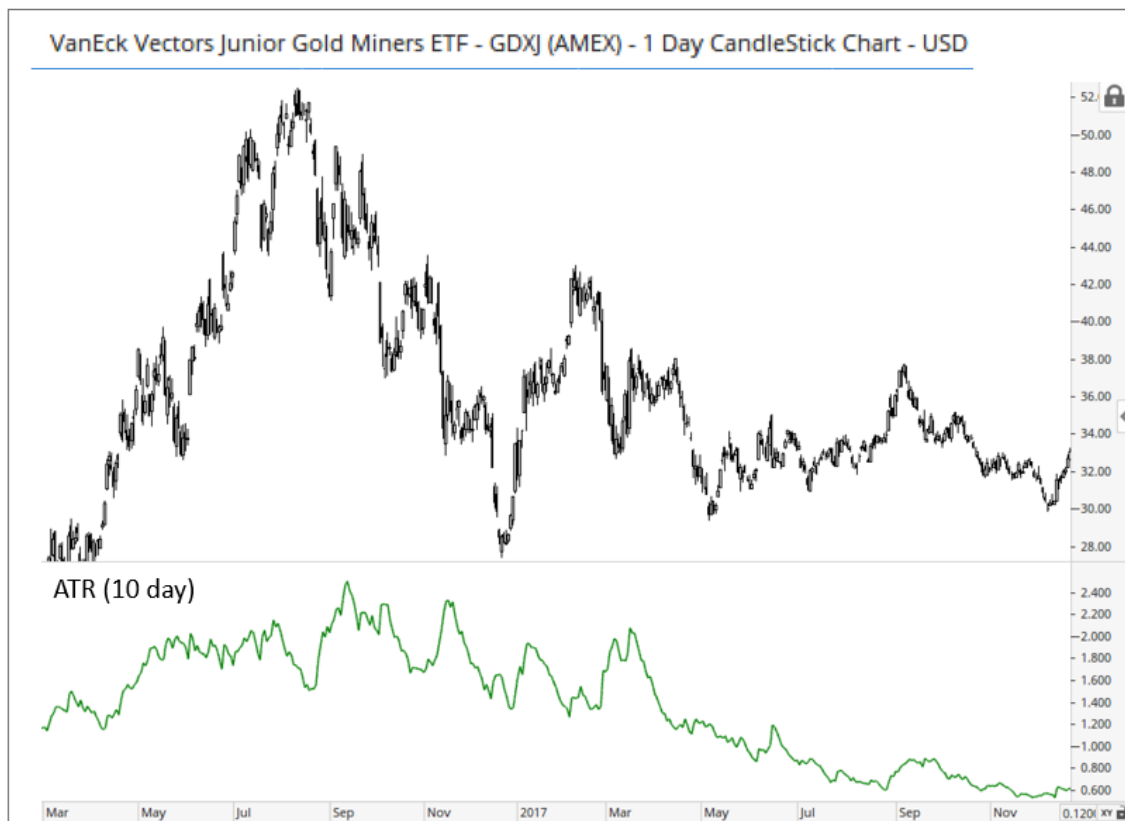
For questions 5 and 6: Consult the following two exhibits:

- Table 2 provides data on a 3-position portfolio (20% Gold mining ETF, 30% Gold commodity, and 50% in the S&P 500).
- Chart 1 of GDXJ (Junior Gold Mining ETF).

The Alpha-Edge newsletter cites: "Consider adding gold mining stocks to your portfolio to diversify our gold commodity investment recommendation. The included chart (GDXJ) shows an ETF that holds a variety of mining companies, which are traditionally very volatile. However, in the past six months, notice that prices have traded in a narrower band. This indicates that adding this security to your US Equity portfolio would help to increase the Sharpe Ratio, a key metric used for evaluating risk and reward."

5. Consult the chart of GDXJ. The newsletter is using Average True Range on the GDXJ chart as a measurement for future implied volatility. Do you agree with this and why? How is ATR typically used by technical analysts? (4 points)

Chart 1



6. Examine the table of the three-position portfolio. Discuss one benefit and one disadvantage when using the Sharpe Ratio as the means of determining risk and reward in the recommended portfolio? (6 points)

Table 2

| | Standard Deviation | Expected Return | Sharpe Ratio |
|--------------------|---------------------------|------------------------|---------------------|
| GDXJ | 8 | 12.0 | 1.15 |
| GOLD | 7 | 9 | 1.02 |
| SPX | 13 | 6.4 | .98 |
| 20/30/50 Portfolio | 10.4 | 9.7 | 1.29 |

Answers

1.

A. Deflation

2.

- No
- While a weakening dollar can strengthen gold prices, recent data shows that gold has been more positively correlated to the equity markets.
- While being long gold can provide defense for the short-term (the fear trade) it is typically not a good longer-term investment (compared to equities).
- The seasonality of gold, due to the varying holiday demand by jewelers, causes price changes (supply/demand).

3.

A. Euphoria

4.

- Momentum trading tends to hold winners longer than losers.
- Momentum tends to have lower dividend yield exposure vs value (or tax optimization is easier to control through capital gains/losses vs dividend income).

5.

- No
- ATR is a measure of a security's volatility against itself, BUT it doesn't predict future volatility.
- Typically, ATR is used to help establish risk levels (stop prices).

6.

- One of the following negative rationales. The Sharpe Ratio does not account for:
 - consecutive small losses/gains
 - the order in which gains or losses occur
 - large surges of profits and losses
- One of the following positive rationales. The Sharpe Ratio helps:
 - to quantify reward for a unit of risk
 - to show the value of diversifying different positions, vs holding just one.
 - risk-averse investors, who will prefer to own a portfolio with a higher Sharpe ratio than owning individual securities.



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