CMT LEVEL II
2020 Exam
Information and Samples

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Level II. Theory and Analysis

The following sample CMT Level II questions offer a glimpse into the style and scope of the exam. Each of the sample questions is followed by a relevant excerpt and citation from the 2020 CMT Level II curriculum. These 18 samples are by no means a study guide; instead, consider them a taste of what a Level II candidate will learn to master this segment of the body of knowledge.

Important points to note

- The CMT Level II exam tests on the theory and analysis of applied technical analysis.

- The actual exam consists of 170 multiple-choice questions of which 150 are scored items. The remaining 20 questions are under trial for future use.

- Candidates have four hours to complete the 170 questions on 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.

Knowledge Domain: Theory and History

1. The bias under which an event which has not occurred recently is perceived as having zero or negligible probability of occurring in the future is categorized as

   A. saliency bias.
   B. framing bias.
   C. sunk-cost bias.
   D. anchoring bias.

"When we have not encountered something recently, we have a tendency to ignore that thing even if it is important to an upcoming decision. No one seems interested in buying flood insurance unless there has been a recent flood. Airplane accident insurance is almost never purchased except in airports just prior to boarding a flight, though it is available to be purchased from the moment travel plans are made. When the economy has been strong and vigorous for a long time, fears of an economic slowdown recede almost to the point of being completely ignored."

-- Burton and Shah
CMT Level II Curriculum (2020), Chapter 19, page 414
Learning Objective: Describe each of the four perception biases covered in this chapter

A. saliency bias.

Knowledge Domain: Market Indicators

2. The _____ tracks the breadth of participation in rallies and declines.

    A. MACD line
    B. RSI
    C. relative strength line
    D. advance/decline ratio

"Market breadth measures the imbalance between the number of advancing and declining stocks on a given day. It is the percentage of rising stocks to the total number of stocks traded."

-- Kaufman
CMT Level II Curriculum (2020), Chapter 7, page 216
Learning Objective: Analyze changes in breadth in the context of price trends

"Market breadth refers to the spread or difference between the number of stocks advancing and the number declining on a given day, week, or other defined time interval. Breadth has been measured in a variety of ways ... For [these] purposes ... breadth is defined as the daily advance-decline ratio; that is, it is the difference between a day's advancing and declining issues divided by the total number of issues traded."

-- Aronson
CMT Level II Curriculum (2020), Chapter 36, page 761

D. advance/decline ratio

Knowledge Domain: Trend Analysis

3. What trading decision must a trader make based purely on the trend lines in the chart below?

A. Hold long positions.
B. Close out long positions.
C. Close out short positions.
D. Trading decisions cannot be made by using trend lines.

"Once the support and resistance lines have been drawn, a price penetration of those lines creates the basic trend signal. The bullish support line defines the upward trend, and the bearish resistance line denotes the downward one. For long-term charts and major trends, this is often sufficient. Some traders add the additional rule that once the price has penetrated a trendline, it must remain penetrated for some time period in order to confirm the new trend. Most false penetrations correct quickly."

-- Kaufman
CMT Level II Curriculum (2020), Chapter 1, page 21
Learning Objective: Interpret trend signals using trendlines

A. Hold long positions.

4. When ADX rallies above both directional lines, it identifies

    A. less directional market.
    B. flat and sleepy market.
    C. a trending market.
    D. lull market.

"The ADX is the smoothed value of the DX .... When the ADX is rising, the market is increasingly trending in either direction.
The ADX indicator is valuable in determining when to apply a moving average trend-following system. A rising ADX indicates an increasing tendency to trend in the corresponding prices."

-- Kirkpatrick and Dahlquist
CMT Level II Curriculum (2020), Chapter 2, page 89

C. a trending market.

5. Which of the following instances marks a valid buy signal using a 20-bar simple moving average (blue) and a 50-bar simple moving average (green)?

A. A

B. B

C. C

D. D

"Fourth, some technical analysts use moving averages to give specific signals. These can occur when prices cross a moving average, when a shorter moving average crosses a longer moving average, and in some cases, when a third, even shorter, moving average crosses two longer ones."

-- Kirkpatrick and Dahlquist
CMT Level II Curriculum (2020), Chapter 2, page 85
Learning Objective: Illustrate four ways moving averages are used by technicians

C. C

Knowledge Domain: Chart & Pattern Analysis

6. Which of the following patterns describe the price action highlighted within the green rectangles marked 'A' & 'B'?

A. piercing line and hammer
B. piercing line and evening star
C. bullish engulfing and shooting star
D. bullish engulfing and hanging man

"The bullish piercing pattern consists of a black body forming in the downtrend; the next real body culminates in a white real body that closes within the prior black body, preferably more than one-half of the black body's length. The white real body "pierces" the recent downtrend, with the bulls overwhelming the bears. Subsequent price action should confirm this pattern ..."

-- Nison
CMT Level II Curriculum (2020), Chapter 11, page 321

"The star is the middle portion of two candle patterns called the morning star and evening star ... The morning star's bearish counterpart is the evening star. Three candle lines make up this top reversal signal. In the context of an uptrend, a long white candle appears, convincing the bulls that the rally will continue. Then the star appears in the form of a small real body that classically gaps up from the white candle's closing price. The star's real body (black or white) remains isolated as the next candle confirms the

trend top by gapping away from the star and producing a long, black real body that pushes into the white candle's real body. The final candle seals the fate of the bulls as the bears grab control and push the market downward."
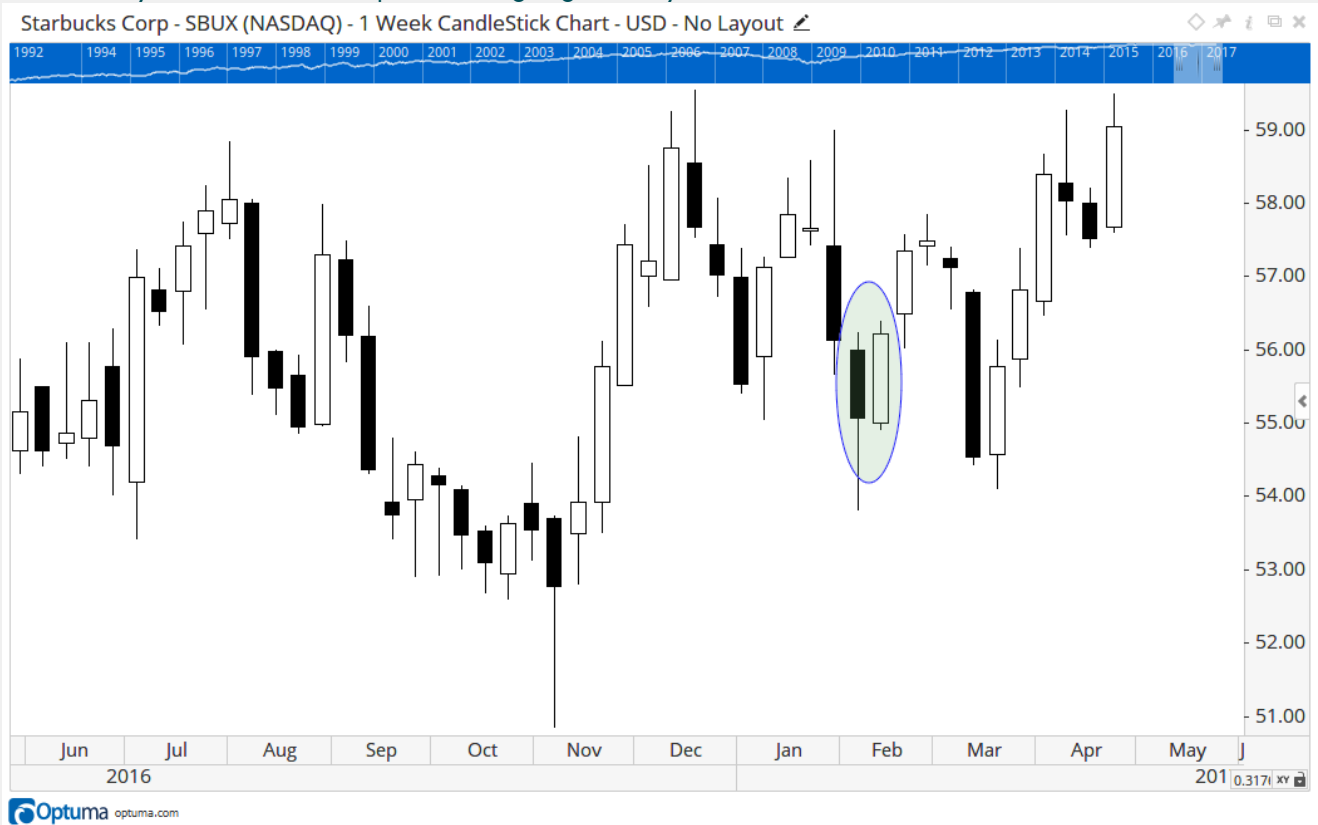
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-- Nison
CMT Level II Curriculum (2020), Chapter 11, page 327-328
Learning Objective: Diagram and interpret notable patterns formed by multiple candles: engulfing, stars, windows and others in this chapter

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B.   piercing line and evening star

7. Identify the candlestick pattern highlighted by the circle in the chart below.

A. harami
B. bullish engulfing
C. hammer
D. marubozu

"...like a piercing pattern, the bullish engulfing pattern typically appears at the culmination of a decline or a downtrend ... The market falls, and a black candle forms. Next, a candle line develops with a real body that wraps around the prior session's black body. ... As the white real body opens under the prior black real body's close and closes above that session's open, it shows that buying pressure has overpowered selling pressure (i.e., the bulls have taken charge!) If the market is solid, the lows of the bullish engulfing pattern should be support."
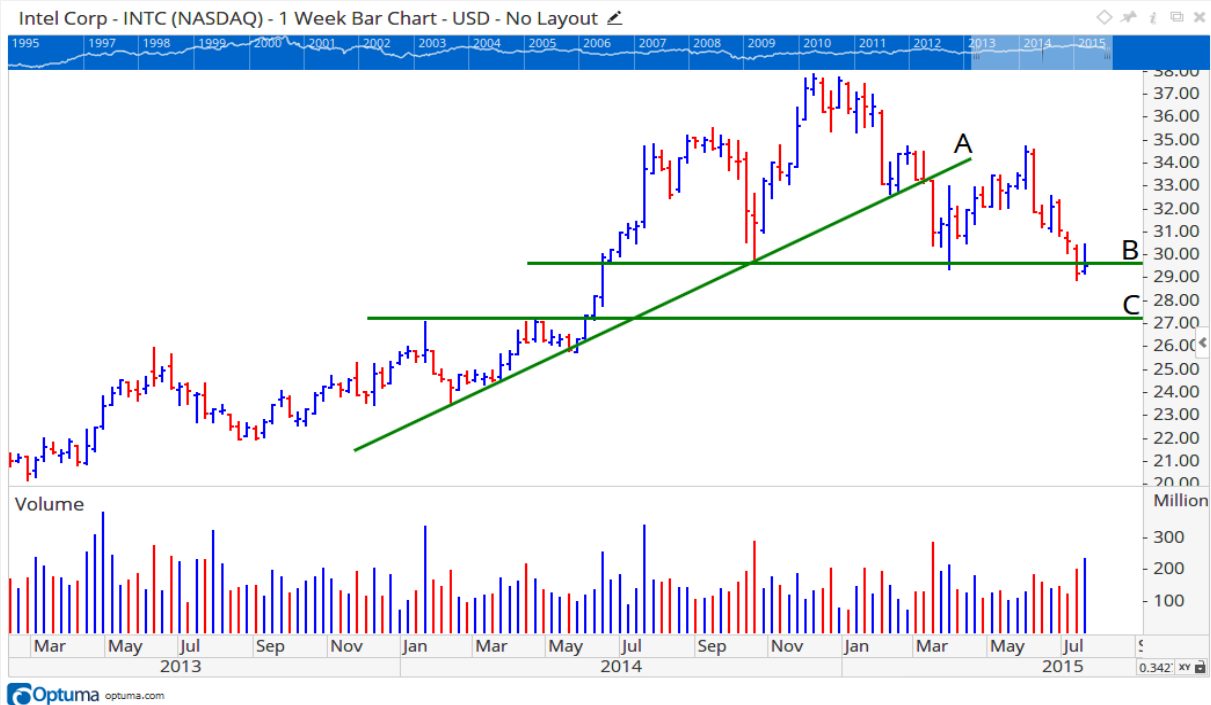
-- Nison
CMT Level II Curriculum (2020), Chapter 11, page 322
Learning Objective: Diagram and interpret notable patterns formed by multiple candles: engulfing, stars, windows and others in this chapter

B. bullish engulfing

8. Based on the chart given below, identify the chart pattern and the best course of action.

A. Head and shoulders top; go long and use current pullback as shares are retesting an important support level at point B.
B. Double top; go short at point A as shares have violated an uptrend support line.
C. Triple top; wait for a close below point C and execute shorts when prices are 2% below the neckline.
D. Head and shoulders top; wait for a close below point B to execute below the neckline.

"Once a pattern has been observed using the preceding descriptive features, the neckline becomes the most important factor. The neckline is where the breakout level resides. Never should one act in anticipation of a break through the neckline."

-- Kirkpatrick and Dahlquist
CMT Level II Curriculum (2020), Chapter 8, page 262
Learning Objective: Draw rounding chart patterns such as head-and-shoulders

D. Head and shoulders top; wait for a close below point B to execute shorts below the neckline.

Knowledge Domain: Cycles

9. Phase refers to

   A. the height of the wave from its horizontal midpoint (the X-axis).
   B. the number of time units necessary to complete one wavelength.
   C. the number of wavelengths that repeat every 360°.
   D. a measurement of the starting point or offset of the cycle relative to a benchmark or theoretical wave.

"After identifying the cycle(s) operating within a market and verifying the dominant cycle, an analyst can begin to "phase" the chart. This is the process of matching actual price lows to theoretical cycle troughs."

-- Crystal
CMT Level II Curriculum (2020), Chapter 13, page 350

-- Crystal
CMT Level II Curriculum (2020), Chapter 14
Learning Objective: Differentiate tools that find cycles
from tools that phase cycles

D. a measurement of the starting point or offset of the cycle relative to a benchmark or theoretical wave.

10. Rising prices, falling volume and falling open interest can be interpreted as

    A. the uptrend is in the last stage.
    B. new buyers entering the market.
    C. short sellers covering their positions causing a rally.
    D. buyers liquidating their long positions in futures and investing in the cash market.

"There is a traditional interpretation for the combined movement of price direction, volume, and open interest.

| Prices	Volume	Open Interest	Interpretation
Rising	Rising	Rising	New buyers are entering the market.
Falling	Falling	Falling	Longs are being forced out; the downtrend will end when all sellers have liquidated their positions.
Rising	Falling	Falling	Short sellers are covering their positions causing a rally. Money is leaving the market.
Falling	Rising	Rising	New short selling. Bearish money is entering the market.

"

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-- Kaufman
CMT Level II Curriculum (2020), Chapter 7, page 203

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C. short sellers covering their positions causing a rally.

11. In the following chart, where is a negative divergence in RSI observed?
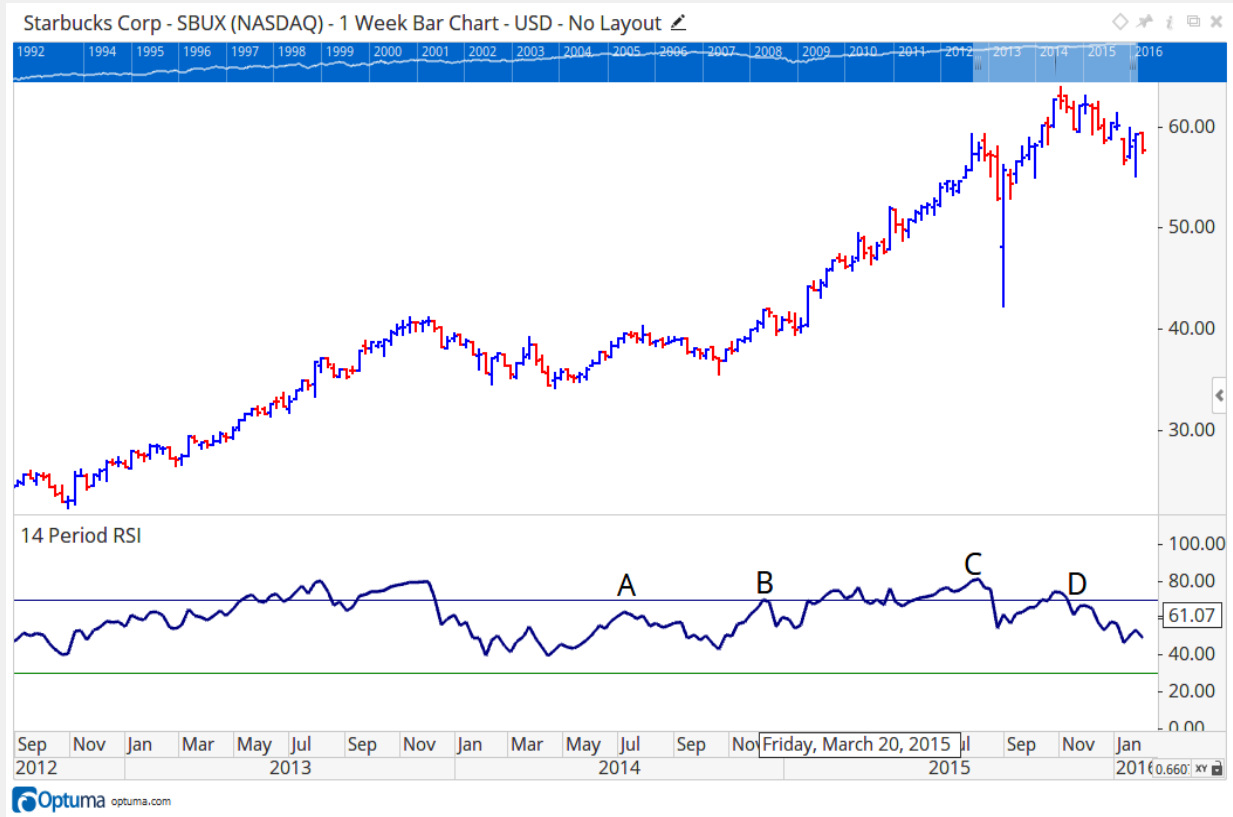
A. A
B. B
C. C
D. D

"Subjective divergence analysis typically involves comparing the peaks and troughs of the two time series under consideration. A negative or bearish divergence is said to occur if one series continues to register peaks at successively higher levels while the other series begins forming peaks at lower levels. The failure by the second series to form peaks at successively higher levels is also termed a bearish nonconfirmation."

-- Aronson
CMT Level II Curriculum (2020), Chapter 36, page 777

D. D

Knowledge Domain: Selection and Decision

12. Because relative strength is so_____ it is used as the primary _____ Random Walk and EMH.

A. successful, defense of
B. successful, argument against
C. weak, defense of
D. weak, argument against

"Not until 1993 was another major paper published on the subject of relative price strength, or momentum as it is commonly called. This paper, "Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency," was also published in the Journal of Finance. The authors, Professors Narishimhan Jegadeesh and Sheridan Titman, ... stated that the t-test statistical evidence forced them "to conclude that the hypothesis of market efficiency can be rejected at even the most conservative levels of significance."

*...by the time of Conrad and Kaul's paper, other doubts about market efficiency had also been demonstrated, and the evidence was not rejected immediately as it had been ... Since then, the basis of their paper has been proven correct not only in foreign countries but also in the period following the original paper in the United States, ...
In 1998, Professor K. G. Rouwenhorst showed that momentum was successful in 12 European stock markets, and in 1999, he demonstrated that momentum was most strong in emerging markets. Other studies confirm the existence of profitability from relative strength in China, Germany, eight different Asian markets (without Japan), and Switzerland. Even Professor Eugene Fama, one of the originators of the EMH, found that momentum was the only anomaly to survive a multitude of tests (Fama and French, 1996). Academia has, thus, concluded that the theory of relative price strength shows success not only in producing profits but also in debunking part of the EMH."*

-- Kirkpatrick and Dahlquist
CMT Level II Curriculum (2020), Chapter 27, page 516
Learning Objective: Explain the principles behind relative strength analysis

B. successful, argument against

Knowledge Domain: System Testing

13. When using out-of-sample testing, the "out-of-sample" refers to

A. a small subset of data that was used to optimize the system.
B. the unexpected set of parameters that gives the best system results.
C. a set of data not used in the system-building process.
D. none of the above.

"... a large portion of the data, called out-of-sample data, must be kept aside to use later when testing the system for robustness. Once a viable system has been adequately optimized, the resulting parameters are then tested against the out-of-sample data to see if the system works with unknown data and was not the result of curve-fitting or data mining."

-- Kirkpatrick and Dahlquist
CMT Level II Curriculum (2020), Chapter 37, page 798
Learning Objective: Differentiate methods of optimization

C. a set of data not used in the system-building process.

14. The measurement that tells the system designer how far a trade was in loss before it came back to close in profit is called

A. maximum favorable excursion.
B. maximum adverse excursion.
C. return retracement ratio.
D. none of the above.

"Maximum favorable and adverse excursions ... inform the system's designer of how much dispersion exists in trades. It can be used to measure the smoothness of the equity curve but also give hints as to where and how often losing trades occur. Its primary use is to give hints as to where trailing stops should be placed to take advantage of favorable excursions and reduce adverse excursions."

-- Kirkpatrick and Dahlquist
CMT Level II Curriculum (2020), Chapter 37, page 811
Learning Objective: Compare various metrics for evaluating trading systems such as profit factor, percent profitable, and average trade net profit

B. maximum adverse excursion.

15. _____ captures an increasing part of the profits as price moves in a favorable direction.

    A. An initial stop
    B. A trailing stop
    C. A sell stop
    D. A standard deviation stop

"Follow a profitable move with a trailing, nonretreating stop based on fixed points or a percentage."

-- Kaufman
CMT Level II Curriculum (2020), Chapter 6, page 167

"...place trailing stops as the price progresses upward."

-- Kirkpatrick and Dahlquist
CMT Level II Curriculum (2020), Chapter 9, page 276

"... devise a stop-loss strategy ... This strategy should include protective and trailing stops, price targets, and adjustments for volatility, type of market, and any other state that the market might be in."
"On the exit side of a trend, specific trailing stops or such can be used to receive better prices..."

-- Kirkpatrick and Dahlquist
CMT Level II Curriculum (2020), Chapter 37, pages 794, 796

B. A trailing stop

Knowledge Domain: Risk Management

16. The only effective method of diversifying a portfolio is by including asset classes with _____ correlation to stocks such as cash, foreign exchange or commodities.

    A. positive
    B. meaningful
    C. low/negative
    D. moderately positive

"The only effective method of diversifying one's portfolio is by including asset classes with low or negative correlation to stocks such as cash, foreign exchange, or commodities. Whatever the relationship is—leading, lagging, or divergent responses to

economic conditions—a strong negative correlation coefficient between two markets is a suggestion that these markets will move against each other sometime in the future. And, of course, the higher the absolute value of the coefficient of correlation, the higher the diversity of their performances."

-- Katsanos
CMT Level II Curriculum (2020), Chapter 28, page 528
Learning Objective: Illustrate the importance of measuring correlation for portfolio diversification and asset selection

C. low/negative

17. _____ as a risk measure results in an estimation of a price move in either direction.

A. Put/Call parity
B. Plurality index
C. Implied volatility
D. Standard deviation

"What the implied volatility of an option projects onto the underlying security is the expected range of price movement over a certain period of time. This estimation of price movement is based on statistics and the bell curve. The implied volatility of an option is the projection of an annualized one standard deviation move in the underlying stock over the life of the option. According to statistics and using implied volatility as a guide, the price of a stock should land between up and down one standard deviation at option expiration. The closing price should land in this range 68.2 percent of the time."

-- Rhoads
CMT Level II Curriculum (2020), Chapter 16, page 383
Learning Objective: Interpret implied volatility as the market's estimate of possible future asset prices

C. Implied volatility

18. What would be the implied volatility if you were told the one day expected movement was 2%?

A. 0.317%
B. 31.7%
C. 6.93%
D. 5.04%

"This single-day implied volatility can be interpreted as being a single standard deviation range of expected price movement of the stock on that day.

CALCULATING SINGLE-DAY IMPLIED VOLATILITY
Assuming there are 252 trading days in a year, the denominator of this formula turns out to be the square root of the number of trading days for the year.

1 Day Movement = Implied Volatility/Square Root of 252

"

-- Rhoads
CMT Level II Curriculum (2019), Chapter 16, page 388
Learning Objective: Calculate single-day implied volatility

B. 31.7%