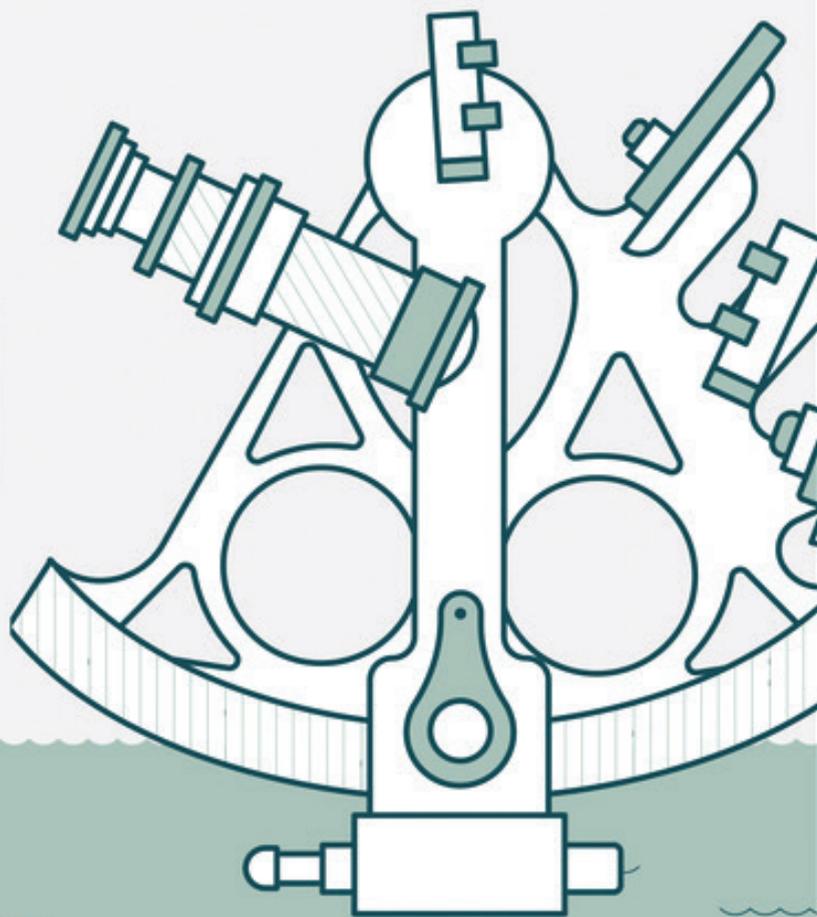


# CMT LEVEL II CURRICULUM

**2022** CHARTERED MARKET  
TECHNICIAN EXAM

THE THEORY & ANALYSIS  
OF **TECHNICAL ANALYSIS**



WILEY

## Level II. The Theory and Analysis of Technical Analysis

### Section I: Chart Development and Analysis

#### 1. Charts - Understanding Data Intervals

- Employ a sequence of multiple data intervals to identify trends
- Compare the typical construction of weekly and monthly interval charts
- Review challenges related to consistent data sampling using time-based intraday intervals
- Interpret general trend relationships in charts with multiple price-data sets
- Interpret the significance of the data points in a scatter plot

#### 2. Additional Charting Methods

- Describe the construction of the types of charts in this chapter
- Compare the axes and intervals of these charts
- Analyze trends and price action using these charts
- Demonstrate how point-and-figure charts help minimize “noise”
- Distinguish between charts with defined and undefined x-axes
- State the basic principles behind Market Profile

#### 3. Moving Averages

- Contrast various types of moving averages used in trend analysis
- Illustrate four ways moving averages are used by technicians
- Analyze trend movement using Directional Movement Indicators
- Compare common envelope, channel and band indicators

#### 4. Time-Based Trend Calculations

- Examine methods for forecasting price direction
- Calculate a simple approach to momentum
- Inventory various weighting methods for moving averages
- Explain the drop-off effect and its impact on technical indicators

## **5. Trend Systems Part 1**

Explain three reasons why trend systems work

Demonstrate appropriate asset selections based on trend and forecast

Diagram how buy and sell signals are used with indicators and tools for measuring trend, such as: Moving Averages, Bollinger Bands, Keltner Channels, Percentage Bands, Volatility Bands, and combinations of bands and other indicators

Illustrate use of the 10-day moving average rule in a trading system

## **6. Trend Systems Part 2**

Analyze how a trader or investor would go about selecting the right moving average, trend method, and speed

Compare the role of each moving average in a two-trend or three-trend method of trading

Contrast two general rules for generating an exit signal when using moving averages, and explain which one of the two is considered better than the other

Describe the “Golden Cross” and the “Death Cross”

## **7. Momentum and Oscillators**

Differentiate between momentum and rate of change studies in technical analysis

Distinguish among various calculations of momentum

Demonstrate use of momentum for trend indication and associated signals

Demonstrate use of momentum for finding price extremes and associated signals

Illustrate the use of MACD to generate trading signals

Compare various oscillators and their trading signals including RSI, stochastics and TRIX

## **8. Price Trends and Volume**

Describe the four phases of price-volume trends

Interpret volume in the context of price trends

Interpret price and volume to identify the current phase

## **9. Volume and Breadth**

Compare various volume indicators such as On-Balance Volume, Accumulation Distribution and VWAP

Analyze changes in breadth in the context of price trends

Interpret breadth indicators such as the McClellan Oscillator

Interpret indicators that combine breadth with volume such as Arms Index and Thrust Oscillator

Examine approaches to incorporating volume and breadth into systematic methods

## **10. Bar Chart Patterns**

Critique the controversy over whether tradeable patterns exist in technical analysis

Discuss the influence that computer technology has had on the study of patterns

Diagram classic chart patterns such as triangles, and double and triple tops and bottoms

Draw rounding chart patterns such as head-and-shoulders

Illustrate "half-mast" chart patterns such as flags and pennants

Demonstrate methods for determining price objectives from patterns

## **11. Short Term Patterns**

Analyze reversals in longer-term trends using short-term price patterns

Interpret the significance of various types of gaps that occur on price charts

Compare and analyze wide-range and narrow-range bars and their implications for volatility

Diagram one and two-bar reversal patterns

Draw common candlestick patterns and analyze their significance within a trend

## **12. Single Candle Lines**

Interpret market psychology from candle shapes

Diagram and interpret notable individual candles: hammer, hanging man, doji and others in this chapter

Demonstrate the importance of such candles in the context of trends

Differentiate between the buying and selling activity represented by real bodies and shadows in these candles

### 13. Multi-Candle Patterns

Diagram and interpret notable patterns formed by multiple candles: engulfing, stars, windows and others in this chapter

Demonstrate the importance of the prevailing trend when interpreting candle patterns

Differentiate between the buying and selling activity represented by real bodies and shadows in these candle patterns

Interpret candle patterns for support and resistance

### 14. Candle Pattern Forecasting and Trading Techniques

Analyze candle patterns on charts for indications of trend reversal and continuation

Interpret candle patterns for support and resistance indications and confirmation

Illustrate how to combine Western chart analysis with candles

Employ candlestick analysis for risk management

Demonstrate using candles in multiple time frames

### 15. Concepts in Cycle Theory

Illustrate the causes of the "mid-cycle dip" and "3/4 cycle high"

Analyze the implications of an inversion

Examine the cyclical explanation for rounded tops and "V-bottoms"

Interpret the implications of left and right translation

Calculate a centered moving average (CMA) envelope

Demonstrate the use of a valid trend line (VTL)

### 16. Applied Cycle Analysis

Diagram the steps to a comprehensive cycle analysis

Differentiate tools that find cycles from tools that phase cycles

Illustrate how to identify a dominant cycle with a spectrogram

Compare the phasing of smaller harmonics to larger harmonics

**Section II: Volatility Measures in Today's Financial Markets**

**17. Options**

- Explain the purpose of options markets
- List the major terms of an option contract
- Describe “the Greeks”
- Define implied volatility

**18. Understanding Implied Volatility**

- Contrast historical and implied volatility when used in price analysis and forecasting
- Interpret implied volatility as the market's estimate of possible future asset prices
- Calculate single-day implied volatility
- List the inputs to an option pricing model

**19. About the VIX Index**

- Explain how the VIX is impacted by put-call parity and options supply
- Interpret VIX as an indication of market sentiment
- Interpret changes in VIX as part of a market forecast
- Calculate expected 30-day movement of an index or a stock

## 20. Prospect Theory

Compare utility theory and prospect theory

Describe loss aversion

Describe the single greatest limitation of prospect theory

## 21. Perception Biases

Describe each of the four perception biases covered in this chapter

Illustrate how each of these biases might affect investor behavior

## 22. Inertial Effects

Describe each of the three inertial effects covered in this chapter

Illustrate how each of these might affect investor behavior

## 23. Analyzing Sentiment in the Stock Market

Analyze the impact of insider activity on a security's price action

Compare insider buying vs insider selling

Analyze short interest and the short interest ratio

Interpret sentiment as drawn from surveys of investors and professionals

## 24. Analyzing Sentiment in Derivatives Markets

Interpret changes in futures open interest in the context of price action

Analyze the Commitments of Traders report

Employ options put/call ratios as sentiment indicators

Interpret volatility data drawn from the options market

**Section IV: Statistical Applications for Technical Analysis**

**25. Inferential Statistics**

- Compare descriptive and inferential statistics
- Demonstrate the use of hypothesis testing to frame statistical tests
- Explain confidence intervals, statistical significance and the base rate fallacy
- Compare coefficients of correlation and determination
- Differentiate between correlation and causation
- Examine the use of regression analysis in technical studies

**26. Correlation**

- Compare Pearson's and Spearman's methods
- Describe the importance of linearity and normality to useful correlation studies
- Analyze the effect of outliers on a regression study

**27. Regression**

- Interpret values generated by regression, multiple regression and tolerance calculations
- Demonstrate the process of selecting meaningful predictor variables for multiple regression studies

**28. Regression Analysis**

- Analyze the concept behind the ARIMA method
- Describe the ARIMA process
- Employ the results of the ARIMA forecast to generate trading signals
- Demonstrate use of linear regression to generate trading signals
- Illustrate the use of linear regression for relative strength studies

### 29. Selection of Markets and Issues

Differentiate between buy-and-hold, position, swing and day trading and the use of technical analysis in each

Compare significant factors in trading stocks versus futures

Distinguish between bottom-up and top-down approaches

Contrast secular and cyclical emphasis

Explain the basic concepts of intermarket analysis

Explain the principles behind relative strength analysis

Compare four methods for calculating relative strength

### 30. Intermarket Analysis

Interpret the rotation of stocks, bonds and commodities in the typical business cycle

Describe methods of determining intermarket relationships

Illustrate the importance of measuring correlation for portfolio diversification and asset selection

### 31. Relative Strength Strategies for Investing

Illustrate a general approach to a momentum strategy using relative strength

Analyze the use of hedging and non-correlated assets in a long-only relative strength model

### 32. A Stock Market Model

Define an environmental model

Contrast internal and external indicators

Sketch the basic components of Davis' Fab Five model

### 33. A Simple Model For Bonds

Categorize each of the four indicators in Zweig's original model as internal or external

Categorize the additional indicator in the modified version as internal or external, trend following or mean reversion

### 34. Perspectives on Active and Passive Money Management

Differentiate between alpha and beta

Compare the Efficient Market Hypothesis with general concepts in behavioral finance and with the Adaptive Markets Hypothesis

Section VI: Designing and Testing Technical Trading Systems

**35. The Statistics of Backtesting**

- Analyze the statistical challenges faced when backtesting
- Appraise four important statistical features of time-series price data
- Illustrate why log returns are often used in backtesting
- Analyze three statistical concerns in backtesting
- Differentiate between signal testing and backtesting

**36. The Scientific Method and Technical Analysis**

- Examine the possibilities and challenges of applying the scientific method to traditional technical analysis
- Analyze the three forms of the EMH as to their information content
- Explain “null hypothesis” as used in the scientific method
- State the five stages of the hypothetico-deductive method
- Critique the three consequences, articulated in this chapter, of adopting the scientific method in technical analysis

**37. Theories of Nonrandom Price Motion**

- Analyze why the existence of nonrandom price motion is a premise of technical analysis
- Describe an “efficient market”
- Analyze behavioral finance as a theory of nonrandom price motion
- Illustrate the two foundations of behavioral finance
- Interpret feedback loops in price action

**38. Case Study of Rule Data Mining for the S&P 500**

- Examine data mining and data-mining bias in testing trading rules
- Define and examine data-snooping bias in testing trading rules

**39. System Design and Testing**

- Differentiate between discretionary and nondiscretionary systems
- Illustrate the advantages and disadvantages of nondiscretionary trading systems
- Inventory the five initial decisions for constructing a trading system per the authors of this chapter
- Distinguish between four types of technical trading systems
- Compare various metrics for evaluating trading systems such as profit factor, percent profitable and average trade net profit
- Differentiate between methods of optimization
- Define “robustness” as it applies to trading systems
- Examine risk-adjusted performance metrics such as Sharpe, Sterling and Sortino ratios