**Question-Answer Pairs**

1. What is financial sentiment analysis?
2. Financial sentiment analysis is the process of analyzing textual data related to financial markets to determine whether the sentiment is positive, negative, or neutral.
3. How does machine learning help in sentiment analysis?
4. Machine learning models classify financial news, stock market tweets, and reports into different sentiment categories using NLP techniques.
5. What are the key challenges in financial sentiment analysis?
6. Challenges include handling domain-specific language, sarcasm, abbreviations, and real-time data processing.
7. What is time series analysis in finance?
8. Time series analysis helps analyze and forecast stock prices, interest rates, and market trends based on historical data patterns.
9. Why is sentiment analysis important for investors?
10. Investors use sentiment analysis to gauge market trends, predict stock price movements, and make informed trading decisions.
11. What role does NLP play in financial sentiment analysis?
12. NLP techniques like tokenization, stemming, and named entity recognition (NER) help extract meaningful insights from financial texts.
    1. What are common machine learning models used in sentiment analysis?
13. Models like Support Vector Machines (SVM), Naïve Bayes, Random Forest, and deep learning (LSTMs, BERT) are commonly used.
14. How can we visualize financial sentiment over time?
15. Sentiment scores can be plotted on time series graphs to show trends and correlations with market movements.
16. What datasets are commonly used for financial sentiment analysis?
17. Popular datasets include FiQA, Financial PhraseBank, and Twitter-based stock market datasets from Kaggle.
18. What is the impact of news sentiment on stock prices?
19. Positive news can drive stock prices up, while negative sentiment can trigger market sell-offs and volatility.