1. If there are no buy orders in the order book (in case of extreme selling), how does a sell order get executed?

   The order book in this case has illiquidity on the buy side. In such a scenario, the sell order will stay in the order book. It would get executed if a buy market order comes in and gets matched with the sell order residing in the order book.

2. How to reduce slippages using an algo or automated execution?

   Traders can deploy custom execution algorithms that enhance their trading chances in the market. Such algorithms might contain non-conventional orders such as FOK, iceberg, pegging, discretionary ranges, etc. that increases the chances of order execution. One can also blend the approach and create an execution algorithm that keeps modifying order prices according to the market conditions. Such techniques help in reducing the slippages traders pay for the execution.

3. What is market-making? Who are market makers, and how do they profit?

   When a trader tries to trade in an illiquid asset, she might face considerable difficulty in completing it. In such a scenario, a market maker tries to take the opposite position so that the execution can happen, thereby providing liquidity in the market. Such an act is known as market-making. The need for market-making arises because of the liquidity issue in the market. If the market stays illiquid, traders will not be able to trade. Hence, market organizers such as stock exchanges often allow market-making, which increases the trading activity. HFT players usually make the markets (provide the liquidity), and as a result, they are known as market-makers. They try to earn from the spread between the bid and ask because they make markets on both sides of the order book. In some geographies, exchanges pay a certain amount of remuneration (called rebates) to market makers to provide liquidity.

4. If one has to place a large order, how to place it with an optimized execution?

   One can use iceberg orders in an automated fashion to execute a large order. Additionally, one can use a blended strategy of pegging orders and discretion ranges to optimize the execution of the chunk (of the iceberg).

5. How can we know if there is buying pressure or selling pressure by looking at an order book?

   The order book shows us the market condition for a given asset at a point in time. One of the insights we can get from this is, if the number of buy orders overweighs the number of sell orders, we can say that there is buying demand for the given stock. Likewise, suppose the number of sell orders is significantly higher than the number of buy orders, it tells us that more traders are willing to sell. Be mindful that the

order book shows only the limit orders. This means that if someone places large market orders multiple times that can sway the opposite side orders, the market conditions can change very quickly.

6. How will the exchange react if two or more market orders come at the same time?

    Exchanges receive orders in a synchronized manner. One of the multiple orders received will be at least some nanoseconds faster than the rest. Also, all orders will be assigned a timestamp and executed in the order they are received.

7. Does the sell order have to match the buy order existing in the order book for it to execute?

    Yes. There has to be a matching opposite side order for a transaction to happen.

8. Does the order book show only the top 5 bid/ask prices or shows the entire tail?

    Most retail trading platforms (provided by brokers) show only the top 5 bid/ask levels, also known as level 2 data. Some brokers might choose to show bid-ask prices up to 20 levels (a.k.a level 3 data). However, if we have access to streaming real-time tick data, we can build an order book up to any level.

9. When and why would people use market orders in an algorithmic trading context?

    Traders usually use market orders when they intend to get fills on their orders at any cost. For example, traders might want to implement market orders when they want to cut loose positions in adverse market conditions.

10. Is it possible to get information on how much was traded at level 1, level 2 and so on?

    Such information can be obtained if we have access to real-time tick data. Using such streaming data, we can build our own order books and can extract the required information.

11. What is the validity of IOC orders?

    IOC orders expire as soon as they reach the exchange matching engine. If there is enough liquidity in the market it will be traded, else it'll be cancelled.

12. Is there a type of order where we can place stop loss as well as profit booking? So that I secure myself on either side of the movement of price.

We can use a bracket order for the said purpose. It allows us to place stop loss and take profit orders at the same time while placing an order to open a new position. Most modern-day brokers allow placing bracket orders.

13. How do we determine which price level is level 1, 2 or 3 since the best bid and ask keeps moving?

The best bid and best ask are said to be a level 1 price. The next best bid and next best ask are said to be a level 2 price. Likewise, the bid next to the 2nd best bid and the ask next to the 2nd best ask is the level 3 price. As market prices keep changing, these prices will also keep changing.

14. When someone is willing to buy at 100, and the other person is willing to sell it at 100.5, how would a trade happen?

The trade will not happen. For a trade to happen, buy and sell prices should match.

15. When we say tick by tick information, are we referring to bid-ask prices and their quantity?

True tick by tick data includes every event such as order placements, execution, modification, cancellation, along with their quantities.

16. What happens when we place a large order to buy and there are not enough sellers to meet that order? Does exchange take a reverse position?

Depending on the type of order used, either we get a partial fill, or the order gets cancelled. For example, if we use the limit order, we will get the partial fill, and the remaining quantity will stay in the order book. The exchange will never take the opposite position.