For 4+ experience, Object Oriented Design and System Design is necessary.

Object Oriented Design (OOD)

For OOD prep please go through Cracking the Coding Interview book’s chapter on OOD. Proceed below if you already know how to model parking lot, chat service, deck of cards, minesweeper, call center, jukebox. Read about Factory pattern, Singleton and Builder. You can read more patterns but not necessary. Interviewer won’t test the knowledge of patterns itself but how you model classes.

Solve below questions:

1. Chess

<https://stackoverflow.com/questions/4168002/object-oriented-design-for-a-chess-game?rq=1>

2. Snake and Ladder

<http://www.cvc.uab.es/shared/teach/a21291/temes/object_oriented_design/materials_adicionals/ladders_and_snakes/ladders_and_snakes.pdf>

^too good  
  
3.Uber

<https://stackoverflow.com/questions/29450151/object-oriented-design-for-a-car-hiring-system-like-uber>

4. Hotel reservation System

<https://stackoverflow.com/questions/17131407/object-oriented-design-for-hotel-reservation-system?rq=1>

5. Poker

Use concept of deck of cards from cracking the coding interview book.  
Use poker rules, implement as below:  
<http://www.netobjectives.com/PatternRepository/index.php?title=TheChainOfResponsibilityPattern#Chain_of_Responsibility:_The_Poker_Example>

Also see <https://stackoverflow.com/questions/6598203/poker-hands-modeling-question>

6. Food delivery system

<http://www.c-sharpcorner.com/article/food-delivery-application-using-with-design-patterns/>

7. Elevator System: <https://stackoverflow.com/questions/493276/modelling-an-elevator-using-object-oriented-analysis-and-design>

System Design  
For System Design prep please go through System\_Design\_doc.

System Design could be High Level or Low Level.  
In High Level it is expected to draw architecture e.g. with client and server, load balancers etc.  
Main focus should be on dividing the components of the system e.g. where would the presentation layer lie, where would be the application layer and core layer , do you need DB and so on.

In low level design, database schemas can be provided. In fact when simply asked to do a system design after high level it is good to provide the DB schema(if applicable)

\*\*\*\*\*Read about WebSockets and Push technology.\*\*\*\*\*

Refer below questions for HLD and LLD :  
1. Tiny URL  
<https://www.educative.io/collection/page/5668639101419520/5649050225344512/5668600916475904>

Nice video with similar explanation : <https://www.youtube.com/watch?v=fMZMm_0ZhK4&t=288s>

2. Instagram  
<https://www.educative.io/collection/page/5668639101419520/5649050225344512/5673385510043648>

3. Twitter

<https://www.hiredintech.com/classrooms/system-design/lesson/67>

4. news feed

<https://stackoverflow.com/questions/4162020/how-can-i-improve-this-php-mysql-news-feed>

5. unique ids for sharding

<https://engineering.instagram.com/sharding-ids-at-instagram-1cf5a71e5a5c>

6. google docs

<https://www.youtube.com/watch?v=mDYuJoQEowQ>

<https://imgur.com/a/Jr0NH>

More design questions :

Ø  Design a MP3 Player

Ø  Design a chess game

Ø  Design a file conversion tool

Ø  Design a torrent Client – For down loading files from Internet

Ø  Design LRU Cache

Ø  Design a Redbus system

Ø  Design a Hotel dealing system

Ø  Design an outlook Scheduling

Ø  Design a E-mail sync

Ø  Design an Automatic software system

Ø  Design an Amazon catalog system

Ø  Design a TV remote system

Ø  Design a parking slot

Ø  Design a furniture management system

Ø  Design a lift(elevator) system

Ø  Design a chess game where user can play in offline mode wit computer, can have online game play, online tournaments. User will also have an online dashboard where he can check his monthly score, monthly rank and annual scores.

Ø  For a company of large scale design an access time management system. Where employees can swipe in or swipe out with the machines available outside of his floor. In Web portal, employee can login to check his active records, employee can also correct his swipe in or swipe out data through the portal. Manager can login into the system and see his and his employee’s active record. A mgr can also correct his employees’ swipe in or swipe out record. A HR can login into the system and can check any employees’ active records. HR can also see how many times an employee corrected his swipe in and swipe out data, how many times a manager corrected his swipe in or swipe out data”. Also draw class diagram &DB design for the same.

1. Design a distributed job scheduler. Users should be able to provide a set of job definitions and computing resources that need to be used for running those jobs through a job definition file. The scheduler should schedule the jobs and run them and keep track of status and report statuses.  
  
In your answer, please do the following:  
a. The features your job scheduler provides (eg. Ability to run the job on a given set of machines)  
b. Provide a design for the job definition file  
c. Provide the components of your system  
d. Algorithms that are used to schedule the jobs  
e. Tools that you will provide for your system and how your users will interact with your system  
f. Provide insights into how your system will scale when there are 1000s of jobs that need to be scheduled all the time  
g. Provide an architecture diagram

2. Design an online retail store. The answer should contain the following (2-3 pages):

a. Outline the features that your online store has – eg. Detail page containing a list of products  
the online store sells  
b. The store should be capable of handling 100s of 1000s of customers and be able to handle millions of transactions per day. So, design for such a scale.  
c. Provide a high level design of the backend infrastructure (we are not interested in the web site design though we are interested in the features that you are providing on the store)  
d. Provide an architecture diagram for the store  
e. Clearly lay out all the components that infrastructure has  
f. Outline the technology choices you make for each of the components

3.Furniture Design question

4.HLD for an online test taking scenario.

6.Implement a stack that will give me min element in O(1) time

7.Given a BST, find the distance between two nodes.

8.Given a character table in Hindi where every character has an integer entry in the table( sans matras), convert a given string into numbers and back again

9.Algorithm to find 100 closest stars to the origin

10.Given two binary trees, write code to tell me if tree B is contained with tree A Will return on first failure without comparing further

11.OO design for zoo management system

12.OO design for tic tac toe game

<http://careercup.com/page?pid=system-design-interview-questions>

<http://careercup.com/page?pid=object-oriented-design-interview-questions>

<http://www.careercup.com/page?pid=amazon-interview-questions>