1. Describe base64 encoding briefly. Give an example. Where is it used? Consult MIME RFC to find out how base64 encoding handles binary data of a length not evenly divisible by three bytes.

2. For a structured p2p network (like Pastry), briefly describe the method used to decide which object is placed in which node.

3. Briefly describe the possible mechanism(s) that can be used to redirect HTTP requests to proper servers in a CDN.

4. Why do we use a challenge-response protocol?

5. Describe the algorithm for computing the digital signature for a message (or document). Why do we need to encrypt the message? Is it not enough to compute the digest (using a cryptographic-hash like MD5) and append it without performing encryption?

6. Draw the timeline of messages (and their contents) of Public-Key Authentication Protocol (not requiring synchronization of parties) that is also used to establish a shared secret session key. Why timestamps are used? Why a message is encrypted using the private key of the sender?