1. The issue of resource utilization shows up in different forms in different types of operating systems built for different computing environments. What set of resources must be managed carefully in the following settings and why?
    a. Mainframe or minicomputer system
    b. Workstations connected to servers
    c. Handheld computers

2. What is multiprocessing? Differentiate between the two form of multiprocessing, namely, symmetric and asymmetric multiprocessing. Indicate three advantages and one disadvantage of multiprocessing systems?

3. How do clustered systems differ from multiprocessing systems? What is the required for two machines belonging to a cluster so that they may cooperate in the spirit of providing a highly available service. i.e., with minimal downtime.

4. Some computer systems do not provide a privilege mode of operation in hardware. Is it possible to construct a secure operating system for those computer systems?

5. Discuss with examples, how the problem of maintaining cache coherence manifests itself in the following processing environments
    a. Single-processor systems
    b. Multiprocessor systems
    c. Distributed systems

6. What are the trade-offs inherent in handheld computers?

7. What is the purpose of the command interpreter? Why is it ideal to separate the command interpreter from the kernel? Is it possible for the user to develop a new command interpreter using the system-call interface provided by the operating system?

8. Why is the separation of policy and mechanism desirable?

9. What is the main advantage of microkernel approach to system design? How do user programs and system services interact in a microkernel architecture? What are the disadvantages of using microkernel approach?

10. Describe the difference among the short-term, medium-term, and long-term scheduling