Short Answer Questions:

1. Among critical section, remainder section, entry section, and exit section, which one should be used to contain shared data access operations?
2. What is the relationship between mutual exclusion, progress and bounded waiting?
3. What does "pre-emptive" mean?
4. What is the return value of test_and_set function?
5. What is the return value of compare_and_swap function?
6. What is the difference between counting semaphore and binary semaphore?
7. What is the relationship between deadlock and starvation?
8. What is the difference between conditional variable and semaphore, regarding the wait and signal operation?
9. List at least five scheduling criteria.
10. List one solution to starvation.
11. What are the four conditions of deadlock characterization?
12. What is the relationship between page and frame?
13. What is called external fragmentation?
14. What is called internal fragmentation?
15. What is the relationship between virtual memory and physical memory?
16. Where is shared library in process virtual address space layout?
17. What is copy on write?
18. What does modify (dirt) bit mean when it had the value 1?
19. If validate bit is i, what does this mean?
20. What does thrashing mean?
21. What is the benefit of memory-mapping files from disk to memory?
22. If we assume 256KB chunk available, kernel requests 21KB, how large memory will be allocated to kernel?
23. What is the definition of positioning time?
24. What is a partition?
25. Why do we need RAID technology?
26. What is the difference of symbolic link and hard link?

True or False Questions:

1. Binary semaphore cannot be used to implement mutex lock as they are totally different.
2. Cache sits between memory and hard disk.
3. Physical address and logical address are the same.
4. In logical address space, base register contains the length and limit register contains the smallest address.
5. Dynamic linking will cause each process having one separate copy of libraries in main memory.
6. Paging solves both internal and external fragmentation.
7. One page table is shared for all the processes in the system.
8. TLB contains all the pages resident in memory.

9. The entire program needs to be loaded into memory for execution.
10. Virtual memory is usually sparse.
11. Virtual memory can be larger than physical memory.
12. All the processes share one table to keep track of open files.

Multiple Choice Questions:

1. What does "761" mean in "chmod 761 game"give "game" is the file name?
(a) the owner can only read the file;
(b) the group can only read the file;
(c) the public can only execute the file;
(d) all the above;

Long Answer Questions:

1. Peterson's solution code;
2. Test_and_set function code;
3. Compare_and_swap function code;
4. Bounded-waiting Mutual Exclusion with test_and_set code;
5. Mutex lock acquire() and release() code;
6. Semaphore implementation with no busy waiting: wait(semaphore *S) and signal(semaphore *S) code;
7. Bounded buffer problem and solution;
8. Readers-writers problem and solution;
9. Dining-philosophers problem;
10. FCFS scheduling algorithm;
11. SJF scheduling algorithm;
12. Shortest-remaining-time-first scheduling algorithm;
13. Round-Robin scheduling algorithm;
14. Multi-level queue scheduling;
15. Resource allocation graph, cycles, deadlocks;
16. Paging with TLB;
17. Two-level paging: address-translation scheme;
18. Page fault;
19. Paging algorithms;
20. Disk scheduling algorithms;