

1. 1) The management of multiple processes within a uniprocessor system is _____.
 A) multiprogramming
 B) structured applications
 C) distributed processing
 D) multiprocessing
2. 2) A situation in which a runnable process is overlooked indefinitely by the scheduler, although it is able to proceed, is _____.
 A) mutual exclusion B) deadlock
 C) starvation D) livelock
3. 3) The requirement that when one process is in a critical section that accesses shared resources, no other process may be in a critical section that accesses any of those shared resources is _____.
 A) critical section B) livelock
 C) mutual exclusion D) atomic operation
4. 4) A means for two processes to exchange information is with the use of _____.
 A) spinlocks B) event flags
 C) condition variables D) messages
5. 5) A semaphore that does not specify the order in which processes are removed from the queue is a _____ semaphore.
 A) weak B) general
 C) strong D) binary
6. 6) A _____ occurs when multiple processes or threads read and write data items so that the final result depends on the order of execution of instructions in the multiple processes.
 A) atomic operation B) race condition
 C) livelock D) deadlock
7. 7) A _____ is an integer value used for signaling among processes.
 A) semaphore B) message
 C) mutex D) atomic operation
8. 8) _____ is when the sequence of instruction is guaranteed to execute as a group, or not execute at all, having no visible effect on system state.
 A) Critical section B) Mutual exclusion
 C) Atomic operation D) Starvation
9. 9) _____ are memory words used as a synchronization mechanism.
 A) Semaphores B) Event flags
 C) Counting semaphores D) Mailboxes
10. 10) The term _____ refers to a technique in which a process can do nothing until it gets permission to enter its critical section but continues to execute an instruction or set of instructions that tests the appropriate variable to gain entrance.
 A) spin waiting B) general semaphore
 C) critical resource D) message passing
11. 11) A _____ is a data type that is used to block a process or thread until a particular condition is true.
 A) deadlock B) general semaphore
 C) condition variable D) mutex
12. 12) A semaphore whose definition includes the policy that the process that has been blocked the longest is released from the queue first is called a _____ semaphore.
 A) general B) strong
 C) weak D) counting
13. 13) The _____ is a programming language construct that provides equivalent functionality to that of semaphores and is easier to control.
 A) atomic operation B) coroutine
 C) critical section D) monitor

14. 14) Probably the most useful combination, _____ allows a process to send one or more messages to a variety of destinations as quickly as possible.	b
blocking send, blocking receive	
nonblocking send, blocking receive	
nonblocking send, nonblocking receive	
blocking send, nonblocking receive	
15. 15) A _____ relationship allows multiple server processes to provide concurrent service to multiple clients.	a
A) many-to-many B) one-to-many	
C) many-to-one D) one-to-one	
16. _____ arises in three different contexts: multiple applications, structured applications, and operating system structure.	1. Concurrency
17. The classic concurrency problem that involves multiple readers that can read from a shared data area when no single writer is exclusively writing to it is the _____ Problem.	15. Readers/Writers
18. In the case of competing processes three control problems must be faced: mutual exclusion, deadlock, and _____ .	4. starvation
19. In the case of _____ , messages are not sent directly from sender to receiver but rather are sent to a shared data structure consisting of queues that can temporarily hold messages.	14. indirect addressing
20. In the case of _____ , processes are sharing resources without being aware of the other processes.	10. competition
21. _____ is a function or action implemented as a sequence of one or more instructions that appears to be indivisible, no other process can see an intermediate state or interrupt the operations.	7. Atomic operation
22. A _____ is a mutual exclusion mechanism in which a process executes in an infinite loop waiting for the value of a lock variable to indicate availability.	11. spinlock

23. A _____ is a programming language construct that encapsulates variables, access procedures, and initialization code within an abstract data type.	8. monitor
24. _____ is a section of code within a process that requires access to shared resources and that must not be executed while another process is in a corresponding section of code	9. Critical section
25. A _____ is a semaphore that takes on only the values of 0 and 1.	5. binary semaphore
26. A monitor supports synchronization by the use of _____ that are contained within the monitor and accessible only within the monitor.	13. condition variables
27. Only three operations may be performed on a semaphore: initialize, increment, and _____ .	12. decrement
28. A situation in which multiple threads or processes read and write a shared data item and the final result depends on the relative timing of their execution is a _____ .	6. race condition
29. A situation in which two or more processes are unable to proceed because each is waiting for one of the others to do something is a _____ .	3. deadlock
30. T F 1) The central themes of operating system design are all concerned with the management of processes and threads	t
31. T F 2) It is possible in a single-processor system to not only interleave the execution of multiple processes but also to overlap them.	f
32. T F 3) As an extension of the principles of modular design and structured programming, some applications can be effectively programmed as a set of concurrent processes.	t
33. T F 4) Race condition is a situation in which two or more processes continuously change their states in response to changes in the other process(es) without doing any useful work	f
34. T F 5) The sharing of main memory among processes is useful to permit efficient and close interaction among processes because such sharing does not lead to any problems.	f

35. T F 6)	t
When processes cooperate by communication, the various processes participate in a common effort that links all of the processes.	
36. T F 7)	t
Atomicity guarantees isolation from concurrent processes.	
37. T F 8)	f
Concurrent processes do not come into conflict with each other when they are competing for the use of the same resource.	
38. T F 9)	t
Two or more processes can cooperate by means of simple signals, such that a process can be forced to stop at a specified place until it has received a specific signal.	
39. T F 10)	t
The functioning of a process, and the output it produces, must be independent of the speed at which its execution is carried out relative to the speed of other concurrent processes.	
40. T F 11)	f
A process that is waiting for access to a critical section does not consume processor time.	
41. T F 12)	t
The case of cooperation by sharing covers processes that interact with other processes without being explicitly aware of them.	
42. T F 13)	f
It is possible for one process to lock the mutex and for another process to unlock it.	
43. T F 14)	t
One of the most common problems faced in concurrent processing is the producer/consumer problem.	
44. T F 15)	t
Processes need to be synchronized to enforce mutual exclusion.	
45. _____ was invented to allow processing time to be dynamically shared among a number of active applications.	2. Multiprogramming