

OS_3**Question #1 (1 point)**

_____ is the act of allowing only one process to have access to a dedicated resource

- ☐ No preemption
- ☐ Circular wait
- ☐ Resource holding
- ☒ Mutual exclusion

Question #2 (1 point)

Which of the following is true about Atomic action on semaphores?

- ☐ Checking the value
- ☐ Changing the value
- ☐ Possibly going to sleep
- ☒ All of the other choices

Question #3 (1 point)

What is the purpose of process synchronization?

- ☐ Let different users run different processes independently
- ☒ Avoid race condition
- ☐ Avoid deadlock
- ☐ None of the other choices

Question #4 (1 point)

Which is true about Mutex?

- ☐ A simplified version of the semaphore when the semaphore's ability to count is not needed
- ☐ Is good only for managing mutual exclusion to some shared resource or piece of code
- ☐ Is a variable that can be in one of two states: unlocked or locked

- ☐ All of the other choices

Question #5 (1 point)

Which is not a goal of a scheduling algorithm for all systems?

- ☒ Response time
- ☐ Policy enforcement
- ☐ Balance
- ☐ Fairness

Question #6 (1 point)

Which of the following is appropriate to release page table and pages?

- ☐ Process creation
- ☐ Process execution
- ☐ Page fault time
- ☒ Process termination time

Question #7 (1 point)

Five batch jobs A through E, arrive at a computer center at almost the same time. They have estimated running times of 8, 6, 2, 10, and 4 minutes. . Determine the average waiting time for FCFS scheduling. Ignore process switching overhead.

- ☐ 17 minutes
- ☐ 18 minutes
- ☐ 18.8 minutes
- ☒ 12,8 minutes

Question #8 (1 point)

How many level of scheduling are used in computer

- ☐ 1
- ☒ 2

☐ 3☐ 4

Question #9 (1 point)

What is Higher-level proposal in the solution of Mutual exclusion and Synchronization?

- ☐ Message passing
- ☐ Monitors
- ☐ Peterson's Solution
- ☐ Disable Interrupts

Question #10 (1 point)

What is Software proposal in the solution of Mutual exclusion with Busy waiting?

- ☐ Message passing
- ☐ Monitors
- ☐ Peterson's Solution
- ☒ All of the other choices

Question #11 (1 point)

Which of the following is not a CPU scheduling criterion?

- ☐ CPU utilization
- ☒ Burst time
- ☐ Throughput
- ☐ Response time

Question #12 (1 point)

Which of the following conditions of semaphore variable "s" implies a busy critical region?

- ☐ $s > 0$

- ☐ $s < 0$
- ☒ $s = 0$
- ☐ None of the other choices

Question #13 (1 point)

Which of the following synchronization mechanisms does not rely on busy-waiting?

- ☐ Lock variables
- ☒ Strict alternation
- ☐ Peterson's algorithm
- ☐ Semaphores

Question #14 (1 point)

In order to implement mutual exclusion on a critical resource for competing processes, only one program at a time should be allowed:

- ☒ In the critical region of the program
- ☐ To perform message passing
- ☐ To exhibit cooperation
- ☐ None of the other choices

Question #15 (1 point)

The scheduling strategy where each process in the queue is given a certain amount of time. After this time has elapsed, the process is preempted and added to the end of the ready queue is referred to as:

- ☐ Prioritization
- ☐ Round-Robin
- ☐ LIFO
- ☐ All of the other choices

Question #16 (1 point)

What is the purpose of CPU scheduling algorithms?

- ☒ Pick one of the ready processes to run next
- ☐ Put to sleep and wake up processes in an efficient manner
- ☐ Allocate memory to the processes in a fair and efficient way
- ☐ None of the other choices

Question #17 (1 point)

Some systems increase the priority of jobs that have been in the system for an unusually long time to expedite their exit, which is known as ____.

- ☐ Lagging
- ☐ Bumping
- ☒ Aging
- ☐ Accelerated priority

Question #18 (1 point)

Which of the following statements about semaphores is true?

- ☐ P and V (Down and Up) operations should be indivisible operations
- ☐ If several processes attempt a P(S) operation simultaneously, only one process should be allowed to proceed.
- ☐ A semaphore implementation should guarantee that processes do not suffer indefinite postponement.
- ☒ All of the other choices

Question #19 (1 point)

The first-come, first-served (FCFS) algorithm is fine for most ____ systems

- ☐ Interactive
- ☒ Batch
- ☐ Real time
- ☐ Multiuser

Question #20 (1 point)

Semaphores that are initialized to 1 and used for two or more processes to ensure only one can enter its critical section at the same time are called:

- ☒ Binary semaphores
- ☐ Integer semaphores
- ☐ Counter semaphores
- ☐ None of the other choices

Question #21 (1 point)

A entry of the Process table is called:

- ☐ Process management block
- ☒ Process control block
- ☐ Process check block
- ☐ All of the other choices

Question #22 (1 point)

Five batch jobs A through E, arrive at a computer center at almost the same time. They have estimated running times of 8, 6, 2, 10, and 4 minutes. Their (externally determined) priorities are 3, 5, 2, 1, and 4, respectively, with 5 being the highest priority. Determine the average waiting time for Priority scheduling. Ignore process switching overhead.

- ☒ 10,8 minutes
- ☐ 12,8 minutes
- ☐ 16,8 minutes
- ☐ 54 minutes

Question #23 (1 point)

Which of the following environments preemption is essential?

- ☐ Batch
- ☐ Interactive
- ☐ Real time
- ☒

None of the other choices

Question #24 (1 point)

Which of the following statements is true about hardware solution to the critical region problem?

- ☒ Disable Interrupts
- ☐ Monitors
- ☐ Semaphore
- ☐ None of the other choices

Question #25 (1 point)

What happens when a thread calls Down (S) when it wants to enter its critical section, where S is a binary semaphore set to 1?

- ☐ The thread is allowed to enter its critical section and S is decremented.
- ☐ The thread is blocked and added to a queue of waiting threads.
- ☐ The semaphore is set to 2.
- ☐ None of the other choices

Question #26 (1 point)

Which is not a goal of a scheduling algorithm for real-time systems?

- ☐ Meeting deadlines
- ☐ Predictability
- ☐ Fairness
- ☐ None of the other choices

Question #27 (1 point)

Which of the following is a preemptive scheduling algorithm

- ☐ FCFS
- ☐ Shortest Job First
- ☒ Round Robin

- ☐ None of the other choices

Question #28 (1 point)

Assume jobs A-D arrive in quick succession in the READY queue. Using round robin scheduling (quantum=4), the turnaround time for job B is _____.

Arrival time: 0 1 2 3

Job: A B C D

CPU cycle: 8 4 9 5

- ☐ 7
- ☐ 20
- ☐ 22
- ☐ 24

Question #29 (1 point)

Which one cannot be able to solve the race condition?

- ☐ TSL
- ☐ Shared memory
- ☒ Semaphore
- ☐ Monitor

Question #30 (1 point)

Five batch jobs A through E, arrive at a computer center at almost the same time. They have estimated running times of 8, 6, 2, 10, and 4 minutes. Determine the average waiting time for SJF (Shortest job first) scheduling. Ignore process switching overhead.

- ☐ 14 minutes
- ☒ 8 minutes
- ☐ 6 minutes
- ☐ 18.8 minutes

Question #31 (1 point)

Which statement about disabling interrupts to resolve race conditions is

wrong?

- ☐ In theory, a program can disable interrupts when it enters a critical section, and re-enable interrupts when finished with a critical section, to eliminate race conditions.
- ☐ Disabling/enabling interrupts may negatively affect the I/O system.
- ☐ Programs with infinite loops in their critical sections are a significant problem with the interrupt-based approach.
- ☒ User-mode programs are the best place to invoke `disableInterrupt()`.

Question #32 (1 point)

Five batch jobs A through E, arrive at a computer center at almost the same time. They have estimated running times of 8, 6, 2, 10, and 4 minutes. Determine the average turnaround time for SJF (Shortest job first) scheduling. Ignore process switching overhead.

- ☐ 14 minutes
- ☒ 8 minutes
- ☐ 6 minutes
- ☐ 18.8 minutes

Question #33 (1 point)

Which is not a goal of a scheduling algorithm for batch systems?

- ☐ CPU utilization
- ☐ Throughput
- ☐ Turnaround time
- ☐ Response time

Question #34 (1 point)

Which of the following is correct about Shortest Job First scheduling algorithm?

- ☐ Avoid Starvation
- ☒ Minimize average waiting time
- ☐ Avoid Starvation and Minimize average waiting time
- ☐ None of the other choices

Question #35 (1 point)

Which is a method of interprocess communication that use two primitive send and receive?

- ☐ Lock variables
- ☐ Message passing
- ☐ Peterson's algorithm
- ☐ Semaphores

Question #36 (1 point)

Assume that four jobs A-D require the CPU cycles listed below. Using the Shortest Job First algorithm, the _____ job is run first.

Arrival time: 4 1 0 2

Job: A B C D

CPU cycle: 5 2 6 4

- ☐ A
- ☐ B
- ☒ C
- ☐ D