Assignment 6

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

1. Consider the following code, completing of a swap function which is atomic:

```c
void swap(b1, b2, b3)
{
    (bool temp)
    b2 = b1; 
    b1 = b3; 
    b3 = temp; 
}

void proc1()
{
    (bool b)
    (bool c)
    (short s1)
    s1 = proc2(b, c)
    proc3(c)
}

void proc2(b, c)
{
    proc1(b, c, s1)
}
```

(a) What is the function `proc2` doing?
(b) The above code does not provide ________.
(c) `proc2` has the atomically section.
(d) The code snippet solves the synchronization problem.
(e) `proc2` is the function that is atomic.

2. In the binary algorithm for synchronization, if two processes have the same token, then the processes with lower process number returns the critical section.

(a) True
(b) False

3. Peterson's solution is a synchronization mechanism works for maximum of ______ processes.

(a) True
(b) False

4. If the value of a counting semaphore is -1, then the maximum number of requests for the critical section before it blocks is ________.

(a) True
(b) False

5. Context switch cannot happen while a process is executing critical section.

(a) True
(b) False

6. Consider a program which operates 10 threads to find out the sum of all elements in a shared array of 100. Each thread `(i)` takes elements `Aj` is A[i]/P and computes a local sum, `Sum(i)` and eventually adds `Sum(i)` to a shared variable `sum`. Which of the following needs to be passed inside a critical section?

(a) Reading array value
(b) Adding to local sum
(c) Writing to the above
(d) None of the above

7. In a certain application, the initial value of a counting semaphore is 10. The following operations were completed on the semaphore in the given order: `V(5) V(2) V(4) V(5) V(4)`. The new value of counting semaphore is ________.

(a) True
(b) False

8. Consider the notation `V` and `P` to indicate clean operations and an infinite operations on a semaphore respectively. For an application using a counting semaphore, the following sequence of operations is obtained: `P(4) V(1) V(4) P(3)`. The value of the semaphore at the end of these operations is ______.

(a) True
(b) False

9. If the value of a current value of a counting semaphore is 5, what does this imply?

(a) True
(b) False

10. The number of processes that can enter the critical section is 2.

(a) True
(b) False

11. The number of processes that can critical section and remain in blocked state is 2.

(a) True
(b) False