Operating System
Quiz : [7]

[CSL301]
Synchronization
Time: 20 min

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Questions : [1-5]

Q.1 A _____ is a synchronization primitive that provides mutual exclusion by allowing only one thread to enter a critical section at a time.

Q.2 The operation used to decrease a semaphore value is known as _____.

Q.3 The critical section problem arises when multiple processes access _____ resources simultaneously.

Q.4 _____ condition ensures that only one process executes in its critical section at any given time.

Q.5 A process that waits indefinitely due to improper resource allocation suffers from _____.

Questions : [6-8]

Small Numeric Type

Q.6 If the initial semaphore value is 1, and 4 processes perform wait(S) followed by signal(S) in sequence, what will be the final value of S?

Small Numeric Type

Q.7 Consider a non-negative counting semaphore S. The operation P(S) decrements S, and V(S) increments S. During an execution, 20 P(S) operations and 12 V(S) operations are issued in some order. The largest initial value of S for which at least one P(S) operation will remain blocked is_____.

Short Descriptive

Q.8 Differentiate between a binary semaphore and a mutex.
Q.9 How do semaphores prevent race conditions?

Questions : [10]

The following two functions P1 and P2 share a variable B with an initial value of 2 and execute concurrently.

Code

```
P1() {    C = B - 1;
   B = 2 * C; }

P2() {    D = 2 * B;
   B = D - 1; }
```

The number of distinct values that B can possibly take after execution is:

_____


Thank
You