St. Thomas’ College of Engineering & Technology

**B.Tech. 6th Semester, 1st Assignment Examination, March 2018**

**Operating System [CS - 603]**

## Full Marks : 40 Time : 1½ Hour.

1. A shared variable x, initialized to zero, is operated by four processes W, X, Y, Z. Process W and Z increment x by one while process X and Y decrement x by two. Each process before

reading perform ‘wait()’ on a semaphore ‘S’ and ‘signal()’ on S after store, if Semaphore ‘S’

is initialized to two. Find what the maximum possible value of x is after all processes

complete execution.

2. On a system using Round Robin Scheduling, let s represent the time required to perform a

process switch, q represent the RR time Quantum and r represent the average time a process

runs before blocking on I/O. Give a formula for CPU efficiency given the following :

1. q = ∞ ii) q>r iii) s<q<r iv) s=q<r v) q nearly 0

3. A system uses the following Preemptive Scheduling (process with higher priority number has higher priority). Processes enter the system with priority 0. While waiting in the ready queue the priority changes at the rate (alpha) and while running its rate changes at β (beta).

1. What is the algorithm that results from α<β<0
2. What is the algorithm that results from α>β>0

4. What is the content of Process Control Block?