University of Central Florida

**Department of Electrical Engineering & Computer Science**

 **CGS3763: Operating Systems Concepts**

**Spring 2015**

**Homework 4**

**Due Tuesday, March 25th, 2015 by 11:59 p.m. (Submit on Webcourses)**

1 - Answer the following questions about I/O operations: - 20 points

1. Where is the I/O request queue?
2. Give the name of the program that produces the IORBs.
3. Give the name of the program that consumes the IORBs.
4. When the I/O operation is completed how the OS does identifies the process that initiated the I/O request?
5. Give the names of three of the fields of the IORB.

2- Using the producer consumer approach describe (using pseudo code) how the IORB are produce by the OS and consume by the device handler. – 20 points

3- Define following concepts from Queuing theory. – 20 points

 a) Queue Delay

 b) Service time

 c) Response time

 d) Utilization fraction

 e) Throughput

4- For a deadlock to occur, four necessary conditions must hold. Name them. – 20 points

5- By ensuring that at least one of the necessary conditions can not hold, we can prevent the occurrence of a deadlock. How can we deny mutual exclusion of nonsahrable devices? Give an example.– 20 points

Turn in the HW on web courses.