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| **National University of Computer and Emerging Sciences, Lahore Campus** | | | | |
| C:\Users\saif\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\final design.jpg | **Course:** | **Operating Systems** | **Course Code:** | **CS205** |
| **Program:** | **BS (Computer Science)** | **Semester:** | **Spring 2019** |
| **Due Date:** | **19-3-2019** | **Total Marks:** | **5** |
| **Section:** | **C** | **Weight** | **5** |
| **Exam:** | **Quiz 2** | **Page(s):** | **1** |
| **Name:** |  | **Roll #:** |  |

Write your name and roll # first.

Assume that you are given the following code for three threads. Assume that the threads can be created and started in any order.

**void\* T1 (void\*)**

**{**

**while(1)**

**{**

**wait(&s1);**

**printf(“C”);**

**signal(&s2);**

**}**

**}**

**void\* T3 (void\*)**

**{**

**while(1)**

**{**

**wait(&s3);**

**printf(“D”);**

**signal(&s1);**

**}**

**}**

**void\* T2 (void\*)**

**{**

**while(1)**

**{**

**wait(&s2);**

**printf(“A”);**

**printf(“B”);**

**signal(&s3);**

**}**

**}**

1. What will be the output if initial values of semaphores are s1=1, s2 = 0 and s3 =0? **[1 marks]**
2. What will be the output if initial values of semaphores are s1=0, s2 =0 and s3 = 0? **[1 marks]**
3. What will be the output if initial values of semaphores are s1=0, s2=0 and s3 = 1? **[1 marks]**
4. Consider the following rewrite of this code. What is printed if initial values of semaphores are s1=0, s2 = 1, s3 =0, s4 =0? **[2 marks]**

**void\* T1 (void\*)**

**{**

**while(1)**

**{**

**wait(&s2);**

**printf(“C”);**

**signal(&s4);**

**wait(&s3);**

**printf(“F”);**

**signal (&s1);**

**}**

**}**

**void\* T3 (void\*)**

**{**

**while(1)**

**{**

**wait(&s4);**

**printf(“D”);**

**signal(&s3);**

**}**

**}**

**void\* T2 (void\*)**

**{**

**while(1)**

**{**

**wait(&s1);**

**printf(“A”);**

**printf(“B”);**

**signal(&s2);**

**}**

**}**