	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:	**Solution**	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 <u>in any order</u>.

```
void* T1 (void*)
{
    while(1)
    {
        wait(&s1);
        printf("C");
        signal(&s2);
    }
}
```

```
void* T2 (void*)
{
    while(1)
    {
        wait(&s2);
        printf("A");
        printf("B");
        signal(&s3);
    }
}
```

```
void* T3 (void*)
{
    while(1)
    {
        wait(&s3);
        printf("D");
        signal(&s1);
    }
}
```

a. What will be the output if initial values of semaphores are s1=1, s2 = 0 and s3 =0? **[1 marks]**
CABDCABD ….

b. What will be the output if initial values of semaphores are s1=0, s2 =0 and s3 = 0? **[1 marks]**
No output. There will be a deadlock.

c. What will be the output if initial values of semaphores are s1=0, s2=0 and s3 = 1? **[1 marks]**
DCABDCAB …

d. 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]**
CDFABCDFAB ….

```
void* T1 (void*)
{
    while(1)
    {
        wait(&s2);
        printf("C");
        signal(&s4);
        wait(&s3);
        printf("F");
        signal (&s1);
    }
}
```

```
void* T2 (void*)
{
    while(1)
    {
        wait(&s1);
        printf("A");
        printf("B");
        signal(&s2);
    }
}
```

```
void* T3 (void*)
{
    while(1)
    {
        wait(&s4);
        printf("D");
        signal(&s3);
    }
}
```