Science and Engineering

IN SEMESTER ASSESSMENT - I

Course: Operating System Principles and Programming	USN :
Course Code : 18ECSC202	Semester : IV
Date of Exam : 26-02-2020	Duration : 75 Minutes
Max. Marks : 40	

Note : Answer any TWO full questions.

Q.No.	Questions	Marks
1.a	What is race condition? Demonstrate with an example.	6 M
1.b	A server either creates a **thread** or a **process** to respond to clients. Which of these two solutions is efficient? Justify your answer.	6 M
1.c	Predict the output of the following code. Show the parent and child output separately.	8 M

```
int main( )
{
        pid_t  a1,a2;
        printf(" Hello1  ");

        a1 = fork();
        if(a1 < 0 )
              printf(" fork error")
        else if (a1==0)
              printf("Hello2");
        else
              printf("Hello3");

        a2 = fork();
        if(a2 < 0 )
              printf(" fork error")
        else if(a2==0)
              printf("Hello4");
        else
              printf("Hello5");
        exit(0);
}
```

2.a	Discuss the various operations of an operating system.	6 M

2.b	Analyze the following program and determine the **output of each process**.
	
	int main( )
	{
	printf(" KLETECH \n");
	fork( );
	printf("SoCSE \n");
	fork( );
	fork( );
	printf("HUBBALLI \n");
	exit(0);
	}
		6 M

2.c	Write a C/C++ program to send data from parent to child over a pipe. Demonstrate with a figure.	8 M
3.a	What is critical section problem? Discuss Peterson solution to critical section problem and prove that the solution is correct.	10 M
3.b	Burst time (in minutes) of all processes are as follows: P1 process will take 20 minutes of CPU burst time to complete the given task. P2 process will take 50% more than that of P1 process. P3 process will take average burst time of P1 and P2 processes. Each process is arriving to the system one after the other maintaining 2 minutes of delay (P1 arrives at time 0), Draw the Gantt charts using: (i) Preemptive SJF(shortest remaining time first) (ii) Preemptive priority scheduling algorithms (Priorities : **P1-3, P2-2, P3-1 : High priority - 0**) **Compute ATAT and AWT of processes**	10 M