



WALCHAND COLLEGE OF ENGINEERING, SANGLI.

(An Autonomous Institute)

Second Year B.Tech. (Computer Science and Engineering) MID SEMESTER EXAMINATION SEM.-II MARCH-2020 OPERATING SYSTEMS (4CS223)

MSE

Exam Seat Number: _____

Day, Date and Time: Wednesday, 04/03/2020, 10.30am to 12.00Noon

Max Marks: **30**

IMP: Verify that you have received question paper with correct course, code, branch etc.

- Instructions: i) All questions are compulsory. Writing question number is compulsory. The answers may not be assessed if question number is not written. Assume suitable data wherever necessary.
ii) Figures to the right of question text indicate full marks.
iii) Mobile phones and programmable calculators are strictly prohibited.
iv) Except Exam Seat Number writing anything on question paper is not allowed. Exchange/Sharing of stationery, calculator etc. not allowed.

Text on the right of marks indicates course outcomes (only for faculty use)		Marks	
Q1 A)	List and elaborate all the design goals of operating system.	4	CO1
Q1 B)	Suppose two processes enter the ready queue with the following properties: Process 1 has a total of 8 units of work to perform, but after every 2 units of work, it must perform 1 unit of I/O. Assume that there is no work to be done following the last I/O operation. Process 2 has a total of 20 units of work to perform. This process arrives just behind P1. 1. Draw the Gantt chart for the shortest-job-first (preemptive) and 2. Round-robin algorithms. (Assume a time slice of 4 units of RR) What is the completion time of each process (P1 and P2) under each algorithm?	4	CO3
Q1 C)	Consider the following process state transition diagram and statements. I) If process makes transition D, it would result another process making a transition A immediately. II) The process P2 in the wait/block state can make transition E while another process P1 is in running. III) The operating system uses pre-emptive Scheduling. IV) The operating system uses non-preemptive Scheduling.	4	CO2
<pre>graph LR; New([New]) -- A --> Ready([Ready]); Ready -- B --> Run([Run]); Run -- C --> Ready; Run -- D --> Terminate([Terminate]); Run -- F --> wait([wait]); wait -- E --> Ready</pre>			
State and explain which of following sequence is true. a) 1,2 b) 1,3 c) 2,3 d) 2,4			

Q1 D) Consider the following program.

```
void main()
{
    fork ();
    fork ();
    fork ();
    printf ("Hello");
}
```

1. How many Child and Parent Processes are created after executing above code snippet. Also draw process hierarchy for the same.
2. Explain fork() system call in detail.

Q1 E) Differentiate between Process and Threads in Computer System with example.

Q2 A) Consider the following code snippet is ready for execute in computer system.

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int a, sum = 0;
    for (a = 1; a <= 5; a++)
    {
        sum = sum + a;
    }
    printf(" Sum is = %d ", sum);
}
```

Explain in detail the significance of Compiler, Assembler, Linker, Loader with above code snippet.

Q2 B) Illustrate the Context Switching and Priority Inversion with one example.