S.Y. (Comp.) 413

Total No. of Questions – [6] Total No. of Printed Pages: 2

G.R. No.	

MARCH 2020 INSEM (T1)
S. Y. B.TECH. (COMPUTER ENGINEERING) (SEMESTER – IV)
COURSE NAME: OPERATING SYSTEM
COURSE CODE: CSUA22183
(PATTERN 2018)

Time: [1 Hour] [Max. Marks: 20]

Instructions to candidates:

1. Attempt Q.1 **OR** Q.2, Q.3 **OR** Q.4, Q.5 **OR** Q.6
2. Figures to the right indicate full marks.
3. Use of scientific calculator is allowed.
4. Assume suitable data wherever required.

Q. 1) What is process 0 and process 1 in Linux operating system, write their functions? Explain with diagram states of process in details? [8]

OR

Q. 2) Define Process? Explain in detail System Calls used for processes? What is the output of the following code snippet: [8]

```
int main()
 {
   fork();
   fork();
   fork();
   fork();
   printf(" Hello World");
   return 0;
 }
```

How many times the "Hello World" message will be printed on screen and why?

Q. 3) Solve the following problem using Shortest Job First (SJF) with Preemption scheduling algorithm? [8]

Process	Arrival Time	Burst Time
P1	0	6
P2	1	4
P3	2	2
P4	3	3

Calculate: i) Completion Time of each process (CT)
ii) Turnaround Time of each process (TAT)
iii) Waiting Time of each process (WT)
iv) Response Time of each process (RT)
v) Average Waiting Time
vi) Average Turnaround Time
vii) Average Response Time

OR

Q. 4) Solve the following problem using Round Robin scheduling algorithm? [8]

Time Quantum (TQ) for each process: 1

Process	Arrival Time	Burst Time
P1	0	7
P2	2	4
P3	3	2
P4	9	1

Calculate: i) Completion Time of each process (CT)
ii) Turnaround Time of each process (TAT)
iii) Waiting Time of each process (WT)
iv) Response Time of each process (RT)
v) Average Waiting Time
vi) Average Turnaround Time
vii) Average Response Time
viii) Total Number of context switches

Q. 5) Explain in detail what is fragmentation, why it occurs and write about 2 types of fragmentation? [4]

OR

Q. 6) Explain in detail malloc() and free()? [4]