H Roll No. .....

TCS–502

B. TECH. (CSE) (FIFTH SEMESTER)

MID SEMESTER EXAMINATION, 2022

OPERATING SYSTEMS

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.

(ii) Each sub-question carries 10 marks.

1. (a) What are the different components of a Computer System ? Explain operating system, its functions and goals in detail.

10 Marks (CO1)

OR

(b) Explain operating system services and types of operating system in detail.

10 Marks (CO1)

P. T. O.

2. (a) What do you understand by system call ? List various types of system calls in Windows and Unix operating system.

10 Marks (CO2)

OR

(b) Derive the output of the following code :

10 Marks (CO2)

```
int main( )
{
if (fork( ) && (!fork( ))) {
        if (fork( ) || fork( )) {
            fork( );
        }
}
printf("OPERATING SYSTEM");
return 0;
}
```

3. (a) Show the complete execution to find new processes of the following code :

10 Marks (CO1)

```
int main( )
{
        Fork( );
        Fork( ) && Fork( );
}
```

OR

(b) What is the concept of process ? Also explain the memory layout of a process.

10 Marks (CO1)

4. (a) Write short notes on the following :

10 Marks (CO1)

(i) CPU bound process

(ii) I/O bound process

(iii) Degree of multiprogramming

(iv) Process scheduling

(v) Context switching

OR

(b) Explain the different states of a process in detail. Also explain the process control block in detail. 10 Marks (CO1)

5. (a) Consider the following attributes of processes :

Process	Arrival time	Priority	CPU time	I/O time	CPU time
P1	0	2	1	5	3
P2	2	3	3	3	1
P3	3	1	2	3	1
P4	3	4	2	4	1

Assume that priority based scheduling is done in preemption mode. Find :

10 Marks (CO2)

(i) Completion Time of all processes

(ii) CPU idleness

(iii) Throughput

OR

(b) What do you understand by Process Synchronization ? Define the conditions of mutual exclusion. Write and explain peterson algorithm. 10 Marks (CO2)