NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
END SEMESTER EXAMINATION- APRIL/MAY 2021

Subject Code/ Name: CSPC43/ Operating Systems **Date: 12/ 05/ 2021**
Marks: 30 **Time: 10:00 am – 12:20 pm**

Answer all the Questions

1. List out the various definitions of Operating Systems [2]

2. Distinguish between Ordinary pipes and Named pipes. [2]

3. Discuss about the different types of schedulers available in the Operating System. [3]

4. Consider the following system implementing **Paging**. A process can be executed only if all of its pages are brought into the memory. Find the AWT and ATT of the system with the following tasks. Assume that the available memory for the processes is 1200 KB, and the page size is 300KB. Draw snapshots of memory at various times. [4]

Process-id	Arrival	Burst	Size(KB)
J1	0	20	500
J2	5	30	300
J3	10	<sum of the digits of your roll no.>	500
J4	20	10	700

5. Use the second-chance page replacement algorithm for the following memory reference string, and calculate the number of page faults. The reference string is the concatenation of the following: [4]

<sum of the nine digits of your roll no> <roll no. ><reversal of your roll no.>

Suppose the roll no. is 106119167, the memory ref. string is 3,2,1,0,6,1,1,9,1,6,7,7,6,1,9,1,1,6,0,1

6. Assume a 32-bit computer, suppose that the size of the page is a number that is a power of 2 and it is just lesser than your *<last digit of your roll no.>* KB., and 2GB main memory. Explain the process to convert the following virtual addresses to physical addresses: (3)

(0x3F234) H (a hexadecimal number)
$(23459)_{10}$ (a decimal number)

7. Discuss briefly about the necessary conditions for deadlocks to occur. (3)
8. For the following sequence of disk accesses, show the distance moved by the RW arm, using the C-SCAN scheduling. [4]

2305, 2223, 407,1081, 1048, 3819, 1294, 742, 326

9. For the following set of processes, find the average waiting time, response time and turnaround time while applying the Priority preemptive scheduling algorithm. Draw Gnatt charts and show the calculations. [5]

Process Number	Burst	Arrival	Priority
P1	25	0	1
P2	12	10	4
P3	<sum of the digits of your roll no.>	15	3
P4	<sum of the last four digits of the roll no.>	25	<last digit of your roll no.>
P5	60	20	0