

ADMISSION NUMBER											

School of Computing Science and Engineering
Master of Technology in Computer Science and Engineering
Mid Term Examination - Nov 2023

Duration : 90 Minutes
Max Marks : 50

Sem I - E2PV103T - Advanced Operating Systems

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

- 1) Describe some of the challenges of designing operating systems for mobile devices compared with designing operating systems for traditional PCs. K3 (6)

- 2) Illustrate the two models of inter-process communication? What are the strengths and weaknesses of the two approaches? K3 (9)

- 3) Is it possible to have concurrency but not parallelism? Explain K4 (8)

- 4) The following processes are being scheduled using a preemptive, roundrobin scheduling algorithm. Each process is assigned a numerical priority, with a higher number indicating a higher relative priority. In addition to the processes listed below, the system also has an idle task (which consumes no CPU resources and is identified as Pidle). This task has priority 0 and is scheduled whenever the system has no other available processes to run. The length of a time quantum is 10 units. If a process is preempted by a higher-priority process, the preempted process is placed at the end of the queue. K5 (15)

Thread	Priority	Burst	Arrival
P1	40	20	0
P2	30	25	25
P3	30	25	30
P4	35	15	60
P5	5	10	100
P6	10	10	105

 - a. Show the scheduling order of the processes using a Gantt chart.
 - b. What is the turnaround time for each process?
 - c. What is the waiting time for each process?
 - d. What is the CPU utilization rate?

- 5) In a multiprogramming and time-sharing environment, several users share the system simultaneously. This situation can result in various security problems. a. What are two such problems? b. Can we ensure the same degree of security in a time-shared machine as in a dedicated machine? Explain your answer K6 (12)