Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

REG.NO.:

SLOT: C2+TC2

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - I
FALL SEMESTER 2025-2026

Programme Name & Branch : **B.Tech CSE**
Course Code and Course Name : **BCSE303L- Operating Systems**
Faculty Name(s) : VIJAYA KUMAR K, BHULAKSHMI BONTHU, USHUS ELIZEBETH ZACHARIAH, DEEPA.K, GLADYS GNANA KIRUBA B, VENKATA LAKSHMI NARAYANA K, GERALDINE BESSIE AMALI D, ANTO S, HITESHWAR KUMAR AZAD, NIHA K, NAVEENKUMAR J, SIVAPRAKASH S, SURESH P, MALINI S, MOHANA SUNDARI L, THIRUNAVUKKARASAN M, MOHANKUMAR B, PADMAVATHY T, KARTHIKA M S, THANUJA R
Class Number(s) : VL2025260101346, 1341, 4523, 1319, 1327, 1321, 1362, 1365, 1317, 1323, 1342, 1314, 1354, 1358, 1337, 1334, 1339, 2375, 1350, 1331
Date of Examination : **19-08-2025**
Exam Duration : **90 minutes**
Maximum Marks: 50

General instruction(s):

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)

Course Outcomes:
CO1 : Interpret the evolution of OS functionality, structures, layers and apply various types of system calls of various process states.
CO2 : Design scheduling algorithms to compute and compare various scheduling criteria

Q. No	Question	M	CO	BL
1.	a) The design of system software is a tedious task. Among all system software, the complexity of an operating system design stands out. In your point of view, list the any three issues which may lead to this complex design and explain them in brief.	6	CO1	B1
	b) In a few words, illustrate the major functionalities of an operating system.	4	CO1	B1
2.	Write any three system call functions of Linux OS including the one to create process. Give the working of these functions with neat schematic representations.	10	CO1	B2

3.	a) Consider the following C program under execution. Which of the statements in the program would make the OS switch over from user mode to kernel mode? Justify your answer.
	`int main( )`
	`{`
	`int a,b;`
	`printf("Enter two integers a and b:\n");`
	`scanf("%d%d", &a, &b);`
	`if (a>b)`
	`printf (" a is bigger ");`
	`else if ( b>a)`
	`printf("b is bigger");`
	`else printf (" Both are equal");`
	`return 0; }`
		4	CO1	B2

	b) Under which situation, an orphan process will be created? Write any four differences between an orphan process and zombie.	6		
4.	Suppose that processes P1, P2, . . ., P5 arrive for execution at the times given in table. Each process will run for the amount of total time listed, which includes CPU and I/O burst time. Each process spends 25% of time in handling I/O and during remaining time uses CPU cycle. **Process ID** / **Arrival Time** / **Burst Time** P1 / 0 / 4 P2 / 1 / 16 P3 / 10 / 20 P4 / 5 / 8 P5 / 4 / 24 Draw the Gantt chart and calculate the average waiting time, average turn around time and response time of each process while scheduling is done using following algorithms (i) FCFS (ii) SJF (non Pre-emptive) (iii) SJF (Pre-emptive)	10	CO2	B3
5.	There are three queues in the system given below Q1, Q2 and Q3. The Queue numbers represent the privilege. (Lower the number of the Queue ID higher the privilege). The Q1 uses SJF, Q2 uses FCFS and Q3 uses round robin (TS =2) scheduling algorithms. Draw Gantt chart and calculate the average turn around time and waiting time using Multilevel Queue scheduling(Pre-emptive). **Process ID** / **Arrival Time** / **Burst Time** / **Queue ID** P1 / 0 / 7 / 2 P2 / 1 / 6 / 1 P3 / 2 / 4 / 3 P4 / 3 / 3 / 2 P5 / 3 / 4 / 1 P6 / 4 / 2 / 2 P7 / 4 / 1 / 3	10	CO2	

****