3000128210 45

B.Tech (Honours) (Data Science/Artificial Intelligence)

4th Semester, Class Test - I, May, 2023

(AICTE Scheme)

(Computer Science and Engineering Branch)

Operating System

B127473 (022)

Time Allowed: 2 hours

Maximum Marks: 40
Minimum Pass Marks: 14

Note: *(iii)* Each question contains four parts. Part (a) of each question is compulsory. Attempt any two parts from (b), (c), and (d) of each question.
(iv) The figure in the right-hand margin indicates marks.

I. (a) Define time sharing and real time operating system [2]

(b) Write the different types of operating system structure and elaborate any one with neat and clean diagram. [4]

(c) Write about various types of services of operating system. [4]

(d) Write the differences between distributed and parallel processing concept. [4]

II. (a)

Process No.	Arrival Time	Burst Time
P0	0	20
P1	15	25
P2	30	10
P3	45	15

[5]

Calculate TAT, WT of each process. Also calculate AWT of process P2.

(b) Each process Pi, i= 1....9 is coded as follows - [5]

Mutex =1 (initially)
Repeat
P(mutex)
{ critical section }
V(mutex)
Forever

The code for P10 is identical except it uses V(mutex) in place of P(mutex). The initial value of binary semaphore is 1. What is the maximum no. of processes that can be inside the critical section at any moment of time?

(c) Define process with their various states. [5]

(d) Write about any three classical problems of IPC and elaborate any one of them and solve with semaphore. [5]

III.

(a) How we can prevent our system from deadlock? Explain in brief. [5]

(b) Why we use Banker's algorithm? Explain it with one example. [5]

(c) How we detect a deadlock within a system? Write the recovery methods. [5]

(d) Write about PCB and context switching in brief details. [5]
