VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institution, Affiliated to Anna University, Chennai)

Continuous Assessment Test - I				QP Set	1I	Regulations-2018	
Programme	B.E-(Common to CSE &IT)	Semester:	4	Max. Marks:	60	Duration	2.0 Hrs
Course Code & Title:	21ITT41 & Operating Systems						
Class:21CS4A&B, 21IT4A&B		Date: 15.03.2023		Time: 10.30 am – 12.30 pm			
Knowledge Levels (KL)		K1 – Remembering		K3 – Applying		K5 – Evaluating	
		K2 - Understanding		K4 – Analysing		K6 – Creating	

Part A – 12x2 = 24 Marks

		CO	KL
1.	Define operating system.	CO1	K1
2.	Name and draw five different process states.	CO1	K2
3.	Specify the significance of dual mode operation.	CO1	K2
4.	Outline working principle of system boot.	CO1	K2
5.	List out the benefits of multicore programming.	CO1	K2
6.	State the four essential sections in process synchronization.	CO2	K2
7.	Differentiate turnaround time and waiting time.	CO2	K3
8.	Give the requirements to solve the critical section problem.	CO2	K2
9.	How deadlock can be avoided?	CO2	K2
10.	Define race condition.	CO2	K2
11.	Compare logical address and physical address.	CO3	K3
12.	Define external fragmentation.		

Part B – 3x12 = 36 Marks

No.			Question	Marks	CO	KL
13.	(a)	(i)	Illustrate objectives of operating system and functions of operating system with an example.	8	CO1	K2
		(ii)	List and explain any four system calls in operating system.	4	CO1	K2
			OR			
	(b)	(i)	State and elaborate the models of inter process communication with its strengths and weakness.	8	CO1	K2
		(ii)	Annotate Multithreading models with neat diagram.	4	CO1	K2
14.	(a)		Consider the following set of processes, with the length of the CPU burst given in milliseconds:	12	CO2	K3

Process   Arrival time   Burst Time
P0   0   9
P1   1   4
P2   2   9

Draw Gantt charts that illustrate the execution of these processes using the following scheduling algorithms:
FCFS, SJF, SRTS What is the average waiting time and Completion time for the three processes?
b. What is the average turnaround time and Response time using each of these methods?

OR

(b) Consider the following snapshot of a system: 12 CO2 K3

Allocation Max Available
A B C D A B C D A B C D
P0 0 0 1 2 0 0 1 2 1 5 2 0
P1 1 0 0 0 1 7 5 0
P2 1 3 5 4 2 3 5 6
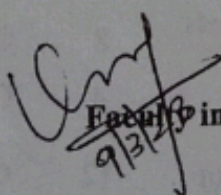P3 0 6 3 2 0 6 5 2
P4 0 0 1 4 0 6 5 6

Answer the following questions using the banker's algorithm:
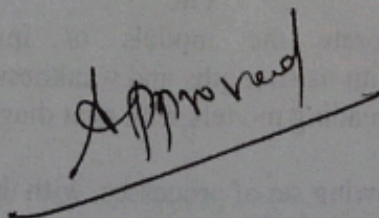a. What is the content of the matrix Need?
b. Is the system in a safe state?
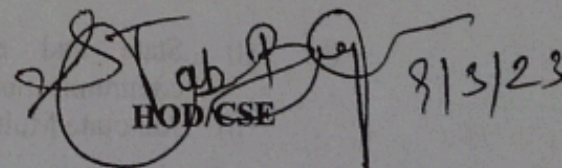c. If a request from process P1 arrives for (0,4,2,0) can the request be granted immediately?

15. (a) Interpret memory protection and memory allocation 12 CO3 K2
strategies in contiguous memory allocation.

OR

(b) Describe different types of page tables and its work flow 12 CO3 K2
with a neat sketch.

Faculty in charge   Approved   HOD/CSE   8/3/23

CSE – 130
IT – 127