


AP.Code	U01CS-1A		Reg.No	
<div>KPR Institute of Engineering and Technology (Autonomous) Avinashi Road, Araur, Coimbatore - 641 407 Learn Beyond</div>			Dept.:	AN, AB, CS, IT
Course Code & Title			Ac.Yr.:	2024 – 2025
: U21CS403			OPERATING SYSTEMS	
Year	:	II	Semester:	04
CIAT	:	I	Duration:	90 Minutes
			Date:	24.03.2025 - AN
			Maximum Marks:	60

Section - A (10X1=10 Marks) Answer All Questions				
Q.No		Marks	BT	CO
1	Identify the four components of computer system from the given options. a Hardware, operating system, Application programs and users b Hardware, Software, Application programs and users c Operating system, System Programs, Application programs and Resources d Hardware, Operating system, Application programs and Resources	1	U	CO1
2	____ contains the memory address of the instruction to be executed inside CPU. a MAR b PC c MDR d IR	1	R	CO1
3	Let the time taken to switch between the user and kernel modes execution be T1 while the time taken to switch between two processes be T2. Which of the following is TRUE? a T1>T2 b T1=T2 c T1<T2 d Nothing can be said about the relation between T1>T2	1	U	CO1
4	The Four Stages involved in instruction execution are ____ a Fetch, Read, Execute and write b Read, Execute, Compile and write c Fetch, Decode, Execute and write d Fetch, Compile, Execute and write	1	R	CO1
5	If Process P1 is executing in its critical section, then no other processes can be executed in critical sections. This Situation refers to ____ a Mutual Exclusion b Progress c Bounded Waiting d Circular wait	1	U	CO2
6	Which of the following is a non-preemptive scheduling algorithm? a Round-robin b Shortest Remaining Time First c First Come First Serve d Multilevel Feedback Queue	1	R	CO2
7	In Round Robin scheduling, what determines the time each process gets on the CPU? a Priority b Arrival time c Time Quantum d Burst Time	1	U	CO2
8	What is the Formula for Turnaround Time(TAT)?	1	R	CO2

9	a TAT=C1+AT c TAT=RT+BT If Processes A,B and C are all requesting resource R, but the operating system allow to access R repeatedly while C continues to wait for R. This Situation is refers to ____ a Deadlock b Aging c Starvation d Busy Waiting	1	AP	CO3
10	Identify the deadlock recovery strategies from the given options. a Resource preemption b Selecting the victim c Mutual Exclusion d Aging	1	U	CO3

Section – B (10X2=20 Marks) Answer All Questions					Marks	BT	CO
Q.No							
11	Define Interrupts.				2	R	CO1
12	Mention the purpose of system calls.				2	U	CO1
13	What is meant by context Switching?				2	R	CO1
14	State the advantages of multiprocessor systems.				2	U	CO1
15	Differentiate between Preemptive and non-preemptive scheduling.				2	U	CO2
16	How does Round Robin (RR) scheduling work, and what is the role of time quantum?				2	U	CO2
17	What are the criteria used to evaluate CPU scheduling algorithms?				2	U	CO2
18	Draw the Gantt chart using SJF(Non-preemptive) Scheduling Algorithm.						
	Process	Arrival time	Burst Time				
	P1	4	12				
	P2	5	6				
	P3	2	9				
19	How does the Banker's Algorithm works?				2	U	CO3
20	List out the different methods to handle the deadlock conditions.				2	U	CO3

Section - C (1X6=6 Marks & 2X12=24 Marks) Answer All Questions				
Q.No		Marks	BT	CO
21 a)	Explain the Banker algorithm for deadlock avoidance in detail.	6	U	CO3
(Or)				
21 b)	Illustrate about the safe and unsafe states in deadlocks.	6	U	CO3
22 a)	Illustrate memory hierarchy with suitable diagram.	6	U	CO1
ii	Distinguish the following terminologies associated with the operating system and explain each of them in detail. <ul style="list-style-type: none"> Multiprogramming systems Multitasking systems 	6	U	CO1

(Or)

22 b)	i	Explain about the system boot with an example.	6	U	CO1															
1	ii	Briefly explain the types of system calls provided by an operating system.	6	U	CO1															
23 a)	<p>Consider the following set of processes with their arrival time and burst time:</p> <table><tr><th>Process</th><th>Arrival Time</th><th>Burst time</th></tr><tr><td>P1</td><td>0</td><td>7</td></tr><tr><td>P2</td><td>2</td><td>4</td></tr><tr><td>P3</td><td>4</td><td>1</td></tr><tr><td>P4</td><td>5</td><td>4</td></tr></table> <p>Find the average waiting time (AWT) and average turnaround time(ATAT) using Pre-emptive SJF Scheduling.</p>		Process	Arrival Time	Burst time	P1	0	7	P2	2	4	P3	4	1	P4	5	4	12	AP	CO2
Process	Arrival Time	Burst time																		
P1	0	7																		
P2	2	4																		
P3	4	1																		
P4	5	4																		

(Or)

Consider the following set of processes with their arrival time and burst time.
Schedule the processes using FCFS Scheduling and Calculate:

- 1) Completion Time
- 2) Turnaround Time
- 3) Waiting Time
- 4) Average Turnaround time
- 5) Average Waiting Time

23 b)

Process	Arrival Time	Burst time
P1	0	3
P2	2	6
P3	4	4
P4	6	5
P5	8	2
P6	9	8
P7	12	3
P8	14	7

12

AP

CO2