Hall Ticket Number:

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II/IV B.Tech (Regular / Supplementary) DEGREE EXAMINATION

February, 2021 — **Common to CSE & IT**

Third Semester — **Operating Systems**

Time: Three Hours — **Maximum:** 50 Marks

Answer ALL Questions from PART-A. (1X10 = 10 Marks)

Answer ANY FOUR questions from PART-B. (4X10=40 Marks)

Part-A

1. Answer all questions (1X10=10Marks)
   a) Define Operating system.
   b) What is context switch?
   c) Draw process state diagram.
   d) What are the advantages of multi-threading?
   e) Define critical section.
   f) What is dead lock?
   g) Define Page fault.
   h) What is the use of virtual memory?
   i) List out file types.
   j) Define volume in connection with disk.

Part-B

2. a) Explain about OS services in detail. 5M
   b) Discuss about memory hierarchy with diagram. 5M

3. a) Explain about IPC techniques i)Shared memory ii)Message Passing 5M
   b) Explain about Multi-threading models. 5M

4. a) Consider the following table of arrival time and burst time for three processes P0, P1 and P2. 5M

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

   The pre-emptive SJF scheduling algorithm is used. What is the average waiting time for the three processes?
   b) Write short note on i)Race condition ii)Synchronization iii)Semaphore 5M

5. a) Explain round robin scheduling algorithm. 5M
   b) Write short note on i) Schedular ii)Ready Queue iii) Turnaround time. 5M

6. Considering a system with five processes P0 through P4 and three resources of type A, B, C. Resource type A has 10 instances, B has 5 instances and type C has 7 instances. Suppose at time t0 following snapshot of the system has been taken: 10M

Process	Allocation	Max	Available
	A B C	A B C	A B C
P_0	0 1 0	7 5 3	3 3 2
P_1	2 0 0	3 2 2	
P_2	3 0 2	9 0 2	
P_3	2 1 1	2 2 2	
P_4	0 0 2	4 3 3	

i)What will be the content of the Need matrix?
ii)Is the system in a safe state? If Yes, then what is the safe sequence?
iii)What will happen if process P1 requests one additional instance of resource type A and two instances of resource type C?

P.T.O.

7.	a)	Briefly explain necessary conditions for deadlocks.	5M
	b)	Explain Resource allocation graph and wait for graph.	5M
8.	a)	Explain File accessing methods	5M
	b)	Explain about file structures.	5M
9.		Explain about various file operations in detail.	5M
		Explain about various file attributes in detail.	5M