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Reg. No. : | | | | | | | | | | |

Question Paper Code: 93305

B.E./B.Tech. DEGREE EXAMINATION, NOV 2023

Third Semester

Computer Science Engineering

19UCS305–OPERATING SYSTEMS

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Multiprocessor system have advantage of CO1- R

   (a) Increased Throughput (b) serial clusters

   (c) operating system (d) multi-tasking

2. What is inter process communication? CO1- R

   (a) communication within the process

   (b) communication between two process

   (c) communication between two threads of same process

   (d) none of the mentioned

3. Identify either the requested physical address: 1280 is a valid address or not, Relocation register:1025 limit register:250. CO2- App

   (a) Valid address (b) Invalid address

   (c) CPU cannot predict (d) None of the above

4. Semaphore is a/an _____ to solve the critical section problem. CO2- R

   (a) hardware for a system (b) special program for a system

   (c) integer variable (d) none of the mentioned

5. _____ is a unique tag, usually a number identifies the file within the file system. CO2- R

   (a) File identifier (b) File name (c) File type (d) None of the mentioned

PART – B (5 x 3= 15 Marks)

6.	List the advantage of multiprocessor system?		CO1- U
7.	Differentiate primitive and non-primitive scheduling.		CO1- U
8.	What is process synchronization?		CO2- U
9.	Define mutual exclusion in critical section problem		CO2- U
10.	What is meant by Disk Scheduling?		CO6- U

PART – C (5 x 16= 80Marks)

11.	(a)	Define system call. Explain various types of system calls.	CO1- U	(16)
		Or		
	(b)	Discuss in detail about various operating system services.	CO1- U	(16)
12.	(a)	Explain in detail about inter processor communication	CO2- U	(16)
		Or		
	(b)	Explain the types of threads	CO2- U	(16)
13.	(a)	The order of pages needed is given identify the page fault of the following algorithms. (i) FIFO (ii) Optimal (iii) LRU Pages needed: 7 0 1 2 0 3 0 4 2 3 0 Page frame is 3	CO4- App	(16)
		Or		
	(b)	The order of pages needed is given identify the page fault of the following algorithms. (i) FIFO (ii) Optimal Pages needed: 1 2 3 2 1 5 2 1 6 2 5 6 3 1 3 6 1 2 4 3 Page frame is 4	CO4- App	(16)
14.	(a)	The operating system contains 3 resources, the number of instance of each resource type are 7,7,10. The current resource allocation state is as shown below.	CO5- App	(16)

Process	Current Allocation			Maximum Need		
	R1	R2	R3	R1	R2	R3
P1	2	2	3	3	6	8
P2	2	0	3	4	3	3
P3	1	2	4	3	4	4

Is the current allocation in a safe state?

Or

(b) What is deadlock? What are the necessary conditions for deadlock to occur? Explain the deadlock prevention method of handling deadlock. CO5- U (16)

15. (a) Suppose that a disk drive has 5000 cylinders, numbered 0 through 4999. The drive is serving a request at cylinder 143. The queue of pending requests, in FIFO order is 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130. Starting from the head position what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithms? FCFS, SSTF, SCAN. CO6- App (16)

Or

(b) On a disk with 1000 cylinders, numbers 0to 999, compute the number of tracks the disk arm must move to satisfy the entire request in the disk queue . Assume the last received was at track 345 and the head is moving towards track 0. The queue in FIFO order contains requests for the following tracks. 123, 874, 692, 475, 105 and 376. Find the seek length for the following scheduling algorithm. CO6- App (16)

(1) SSTF (2) LOOK (3) C-LOOK