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PES UNIVERSITY

PES University, Bangalore **UE15CS302**
(Established under Karnataka Act No. 16 of 2013)

END SEMESTER ASSESSMENT (ESA) B.TECH. V SEMESTER- MAY 2019

UE15CS302-INTRODUCTION TO OPERATING SYSTEMS

Time: 3 hrs **Answer All Questions** **Max Marks: 100**

1	a	What are the services provided by the operating system?	6
	b	Explain the states of process with neat diagrams?	8
	c	What is a scheduler? Explain the types of schedulers	6
2	a	List and explain the challenges in programming multi-core systems?	6
	b	What are the necessary conditions for the deadlock occurrence?	6
	c	What are the types of semaphores?	4
	d	What are the conditions the solution to critical section problem must satisfy?	4
3	a	What is segmentation? Explain the programmer's view of the process.	6
	b	For a given reference strings find out the total number of page faults for LRU algorithm. Assume free frames to be 3. Reference string: 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1	6
	c	The processes p1, p2, p3, p4 enter the system in the sequence specified. Find the waiting time and average waiting time for the SJF scheduling algorithm. Process / Arrival Time / Burst Time P_1 0 8 P_2 1 4 P_3 2 9 P_4 3 5	8
4	a	Suppose that a disk drive has 5,000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is: 86,1470,913,1774,948,1509,1022,1750,130 Starting from the current 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? a. FCFS b. SSTF	8
	b	What are the attributes of a file?	6
	c	Explain the layered file system structure?	6

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5	a	Explain the typical PC bus architecture with neat diagram	6
	b	What are the characteristics of I/O devices?	4
	c	What are the functions of kernel I/O subsystems?	4
	d	What are the functions that can be performed on files?	6