S.E / Comp / Sem-IV / R-19 / 'C' Scheme / Sub:- OS / 8.11.2024

Date:- 11/12/2024

Duration: 3hrs [Max Marks:80]

Q.P. Code:- 10064607

N.B.: (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1		Attempt **any FOUR** (Draw neat diagrams if applicable)	[20]
	a	Explain the term 'Busy Waiting'. Give solution to this problem using Semaphore.	
	b	Explain the Process Control Block	
	c	Explain how the Resource Allocation Graph (RAG) and Wait For Graph (WFG) are used to determine presence of a deadlock.	
	d	Differentiate between User Level Thread and Kernel level Thread.	
	e	Explain Five state Process transition diagram.	

2 a Suppose that a disk drive has 1000 Cylinders, numbered 0 to 999. [10]
Queue = 123,874,692,475,105,376. The drive is currently serving a
Request at cylinder 345 and the head is moving towards track 0.
Find total number of head movements needed to satisfy the requests for the FCFS,
SSTF and SCAN disk scheduling algorithm?

  b Discuss various process scheduling criteria. [10]

3 a Explain the term 'Deadlock' with an example. Explain the deadlock prevention [10]
techniques.

  b What is "Critical Region"? Explain the Peterson's Algorithm as a solution to the [10]
same.

4 a Given five memory partition of 100 KB, 500 KB, 200 KB, 300 KB, and 600 KB [10]
(in order), how would the first-fit, best-fit and worst-fit algorithms place processes
of P1-212 KB, P2-417 KB, P3-112 KB and P4-426 KB (in order)? Which
algorithm makes the most efficient use of memory?

  b Explain Dining Philosophers Problem with solution using Semaphore. [10]

5 a With a diagram, explain the three schedulers used in process management. [10]
  b Explain file allocation methods in details. [10]

6 Write Short notes on (Any Two) [20]
  a LRU as a page replacement policy
  b Functions of OS
  c Paging and Segmentation

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