MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

MLRS

II B.Tech II Sem Supply End Examination, March 2022
Operating Systems
(CSE & IT)

Time: 3 Hours.   Max. Marks: 70

Note: 1. Answer any FIVE questions.
      2. Each question carries 14 marks and may have a, b as sub questions.

1	a)	Discuss about the operating system components.	7M	CO1	BL2
	b)	Explain the micro-Kernel approach of designing the OS.	7M	CO1	BL4
2	a)	Describe the differences between symmetric and asymmetric multiprocessing. What are advantages and disadvantage of multiprocessor systems?	7M	CO1	BL2
	b)	Define the essential properties of the following types of operating systems: i) Distributed ii) Real Time	7M	CO1	BL1
3	a)	What are the objectives of process schedulers? What are different types of schedulers? Explain queueing-diagram representation of process scheduling.	7M	CO2	BL4
	b)	What is difference between a program and a process? Explain the different process states.	7M	CO2	BL1
4	a)	Consider the following four processes represented as (Process, Arrival Time, Burst Time) with the length of CPU burst in milliseconds.{ (P1, 0, 10), (P2, 1, 7), (P3, 2, 13), (P4, 3, 11) }. Using preemptive SJF scheduling i) Draw Gantt chart. ii) Calculate average waiting time.	7M	CO2	BL3
	b)	What is a semaphore? How it can be used in a solution to the critical-section problem? How to overcome the need for busy waiting?	7M	CO3	BL1
5	a)	What is the need of process synchronization? Explain the hardware-based solution for process synchronization.	7M	CO3	BL1
	b)	Explain the different options for breaking a deadlock.	7M	CO3	BL4
6	a)	What is virtual memory? Discuss about demand paging in detail.	7M	CO4	BL2
	b)	Discuss about the paging hardware with TLB.	7M	CO4	BL2

7	a)	Consider the following page address sequence with 100 bytes page. 0100, 0432, 0101, 0612, 0102, 0103, 0104, 0451, 0256, 0611, 0102, 0103,0104, 0610, 0103, 0234, 0104, 0321, 0613 How many page faults will occur for the following replacement algorithms if three frames are available and all frames are initially empty. i) LRU ii) OPTIMAL	7M	CO4	BL3
	b)	Discuss the free-space list implementation by bit-vector.	7M	CO5	BL2
8	a)	Explain the schemes of defining the logical structure of the directory system.	7M	CO5	BL4
	b)	Discuss the usage of stat and ioctl system calls.	7M	CO5	BL2

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