

SVKM'S NMIMS
MUKESH PATEL SCHOOL OF TECHNOLOGY MANAGEMENT & ENGINEERING/
SCHOOL OF TECHNOLOGY MANAGEMENT

Academic Year: 2023-2024

Program/s: MCA

Stream/s :

Subject: Operating Systems

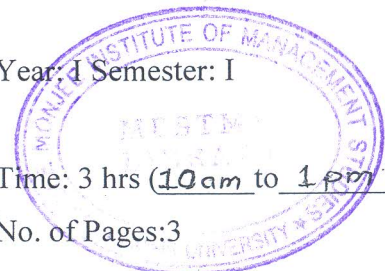
Date: 08 / 02 / 2024

Marks: 100

Year: I Semester: I

Time: 3 hrs (10 am to 1 pm)

No. of Pages: 3



Re-Examination

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer Book provided for their use.

- 1) Question No. 1 is compulsory.
- 2) Out of the remaining questions, attempt any 4 questions.
- 3) **In all 5 questions to be attempted.**
- 4) All questions carry equal marks.
- 5) **Answer each new question to be started on a fresh page.**
- 6) **Figures in brackets on the right-hand side indicate full marks.**
- 7) **Assume Suitable data if necessary.**

Q1		Answer briefly:	
CO-2 ; SO-1,6 ; BL-4	a.	Differentiate between Multilevel queue vs Multilevel feedback queue scheduling.	5
CO-1; SO-1,6 ; BL-2	b.	Explain the Storage hierarchy in terms of size, speed and cost.	5
CO-3 ; SO-1,6 ; BL-2	c.	Discuss the "Test and Set" algorithm to facilitate the Critical section.	5
CO-3 ; SO-1,6 ; BL-3	d.	Illustrate the various techniques of address binding with the help of a diagram.	5
Q2 CO-2; SO-1,6; BL-2	a.	Identify the problem associated with the bounded buffer. How to solve this problem using semaphore. Elaborate with an example.	10
CO-2; SO-1,6; BL-4	b.	Consider the following set of processes with the length of CPU burst time given in milliseconds. Draw the Gantt chart for SRTF, RR ₂ , and Pre-	10

Q5 CO-2,3; SO-1,6; BL-2 CO-2; SO-1,6; BL-3	a.	Explain how the "Diner's Philosopher problem" is solved with an array of semaphores considering all 3 cases.	10
	b.	Demonstrate how the semaphore is helping to solve the Readers' Writers Problem.	10
Q6 CO-3; SO-1,6; BL-3 CO-3; SO-1,6; BL-2 CO-3; SO-1,6; BL-2	a.	Illustrate the Paging hardware with the Translational Look ahead Buffer (TLB) mechanism. Lists the pros and cons of paging.	10
	b.	Explain the term I/O Buffering. Describe Block-oriented and stream-oriented single buffering methods.	5
	c.	Explain the structure of Contiguous and Chained allocation methods.	5
Q7 CO-2; SO-1,6; BL-2 CO-1; SO-1,6; BL-2 CO-1; SO-1,6; BL-2	a.	Interpret Long-term, short-term, and medium scheduler. Discuss the importance of context switching in scheduling.	10
	b.	Explain Micro kernel architecture and list 2 advantages and disadvantages.	5
	c.	Give a short note on Distributed Operating Systems.	5