

**PRAGATI ENGINEERING COLLEGE: SURAMPALEM
(AUTONOMOUS)**

II B.Tech II Semester Regular Examinations, May-2024

**OPERATING SYSTEMS
(Minor in CSE)**

Time: 3 hours

Max. Marks: 70

**Answer ONE Question from each Unit
All Questions Carry Equal Marks**

Q. No.	Questions	BTL	CO	Marks
UNIT – I				
1.	With a neat sketch, explain in detail about the interrelation between various services provided by the operating system.	K2	CO1	14M
OR				
2.	a) Explain the main purpose of an Operating System.	K2	CO1	7M
	b) Compare Serial processing and Batch Processing operating systems.	K2	CO1	7M
UNIT – II				
3.	a) Discuss how the following pairs of scheduling criteria conflict in a certain setting. i) CPU utilization and response time, ii) Average turnaround time and maximum waiting time, and iii) I/O device utilization and CPU utilization.	K4	CO2	8M
	b) Explain multithreading with an example. What are the benefits of multithreaded programming?	K2	CO2	6M
OR				
4.	a) What are the methods to provide synchronization in inter process communication? List the different models of inter process communication.	K2	CO2	7M
	b) Discuss components of process and various states of process with the help of a process state transition diagram.	K2	CO2	7M
UNIT – III				
5.	When do page faults occur? Consider the reference string: 1,2,3,4,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6. Calculate how many page faults and page fault rate occur for the FIFO, LRU and optimal replacement algorithms, assuming two, three, four-page frames (for each).	K4	CO3	14M
OR				
6.	a) Explain in detail about the segmentation.	K2	CO3	7M
	b) What is contiguous and noncontiguous memory allocation? Explain the swapping mechanism with a neat diagram.	K2	CO3	7M
UNIT – IV				
7.	a) What is a deadlock? Explain the necessary condition for deadlock.	K2	CO4	6M
	b) Explain the following deadlock avoidance algorithms: i) Banker's algorithm ii) Safety algorithm.	K4	CO4	8M
OR				
8.	Explain and compare the following disk scheduling algorithms: i) FCFS ii) SCAN iii) C-LOOK.	K2	CO4	14M
UNIT – V				
9.	a) Discuss about the Access matrix and Access control.	K2	CO5	7M
	b) Explain the implementation of firewalls to protect systems and networks.	K2	CO5	7M
OR				
10.	a) Discuss about the Computer security classification.	K2	CO5	7M
	b) Explain IPC mechanism in LINUX.	K2	CO5	7M