

(REVISED COURSE)

(3 Hours)

[Total Marks : 100

- N.B.:**(1) Question No. 1 is **compulsory**.
 (2) Attempt any **four** questions out of remaining **six** questions.

1. (a) Explain features of Modern operating system. 5
 (b) What are requirements of mutual exclusion ? Explain Peterson's algorithm for mutual exclusion. 5
 (c) Explain effect of page type (too small or too large) on performance. 5
 (d) Differentiate between Monolithic Kernel and Micro Kernel. 5
2. (a) What is PCB ? Explain importance of PCB in multiprocessor environment. 10
 (b) What is deadlock ? Explain two approaches for deadlock avoidance. 10
3. (a) Explain ULTs and KLTs in detail. 10
 (b) Consider a system with total of 150 units of memory allocated to three processes as shown : 10

Process	Max	Hold
P ₁	70	45
P ₂	60	40
P ₃	60	15

Apply Banker's algorithm to determine whether it would be safe to grant each of following request. If yes, indicate sequence of termination that could be possible. If no show reduction of resulting allocation table.

- (i) A fourth process arrives with max need of 60 and initial need of 25 units.
 - (ii) A fourth process arrives with max need of 60 and initial need of 35 units.
4. (a) What are characteristics of real time operating system and explain in detail real time scheduling. 10
 (b) Explain types of processor scheduling. 10
 5. (a) State various page replacement policies and calculate hit for (LRU, FIFO, OPT) for page frame of following sequence where page frame size is three : 10
 0, 1, 2, 1, 4, 2, 3, 7, 2, 1, 3, 5, 1, 2, 5.
 (b) What are requirements of memory management ? Explain segmentation with example. 10
 6. (a) What types of files in Unix ? Explain Unix file management. 10
 (b) Explain file allocation in detail. 10
 7. Write short notes on the following : 20
 (a) Mobile OS
 (b) Monitor
 (c) I/O buffering
 (d) System calls.