

(3 Hours)

[Total Marks : 80]

- N.B.**
1. Q.no.1 is **compulsory**
 2. Attempt any **three** out of the remaining five questions
 3. Figures to **right** indicate **full** marks
 4. Assume suitable data if necessary but justify the same

Q.1. Attempt the following

- (a) Explain virtual memory in brief
- (b) Differentiate between Process and Thread
- (c) List the data structures used in Banker's algorithm
- (d) What is paging?

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Q.2. (a) Explain the dining philosopher's algorithm and discuss the solutions
(b) What is the need for page replacement policy? Explain FIFO, LRU and OPTIMAL for the following string assuming the page frame size is 4.

6 1 2 3 1 4 1 5 3 4 1 4 2 3 1

Calculate page hit and page miss for each policy.

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Q.3. (a) Explain system components in Windows Operating System
(b) What is an operating system? Explain its different functions and objectives.

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Q. 4. (a) Explain the file management in LINUX operating system
(b) What is mutual exclusion? Discuss the software approaches for mutual exclusion

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Q.5. (a) Explain I/O buffering techniques in detail
(b) What is deadlock? Explain the deadlock avoidance in detail

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Q.6. Write notes on the following:

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- (a) Thrashing
- (b) Semaphores
- (c) Process Control Block
- (d) Segmentation