

Note: All questions are compulsory.  
Draw neat diagram wherever needed.  
Figures to right indicate full marks.

Q.1 Attempt any two. (10)

- a) Define Operating system and Explain Structure of Computer System.
- b) Explain Clustered Operating System with advantages and disadvantages.
- c) Explain Role of compiler with its different phases.
- d) Write Short note on Linker.

Q.2 Attempt any two. (10)

- a) Explain different interfaces of operating system.
- b) What are the different types of system calls?
- c) Explain simple structure of operating system.
- d) What is virtual machine explain with diagram?

Q.3 Attempt any two. (10)

- a) Write short note on semaphore.
- b) Explain Process State model.
- c) Explain concept of threads and thread models.
- d) Calculate average waiting time according to FCFS algorithm.

Process	Burst Time
P1	5
P2	2
P3	8
P4	4

Q.4 Attempt any two. (10)

- a) Write a short note on fragmentation.
- b) Explain concept of virtual memory.
- c) Calculate page fault for following reference string using FIFO page replacement algorithm.

7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1

- d) Explain Concept of Demand paging.

(10)

Q.5 Attempt any two.

- a) Explain Resource allocation graph.
- b) Explain file types.
- c) Explain concept of Mounting.
- d) Explain deadlock with its four necessary conditions.

(10)

Q.6 Attempt any two.

- a) Write short note on worm.
- b) Explain Application IO interface.
- c) Explain Domain structure.
- d) Explain Different types of virus.

(15)

Q.7 Attempt any three.

- a) Explain Real Time operating system with its advantages and disadvantages.
- b) Explain work of kernel in detail.
- c) What are different scheduling criteria?
- d) Write a short note on logical v/s physical address space.
- e) Explain concept of NFS Protocol.
- f) Explain Typical Bus Structure.