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.