Paper-4: Operating Systems

Time: 3 hours   Max. Marks: 80
SECTION -A

Answer All Questions.   4X15=60

1) a) Explain the operating system structure and its components.
                        (Or)
    b) Explain briefly about the computer system structures.

2) a) Distinguish between preemptive and non-preemptive scheduling. Explain each type
       with an example.
       b) For the following example, explain how round-robin scheduling with a time
       quantum of 4ms works and also compute average wait and turnaround times.

Process	CPU Burst
P1	14
P2	3
P3	9

                (Or)
    b) Explain FCFS and Shortest-Job-First scheduling with examples.

3) a) What is synchronization? Explain how semaphores can be used to deal with n-
         process critical section problem.
                        (Or)
    b) Explain Deadlock detection and recovery mechanism.
    c) Explain the difference between internal and external fragmentation.

4) a) What is memory management? Explain the levels of memory management.
                        (Or)
    b) What is Virtual memory? Explain the concept of virtual memory management.

                        SECTION-B
Answer any four questions.   4 x 5=20
    5) Explain multiprogramming and System Call.

    6) Explain the concept of thrashing.

    7) Discuss design issues in contiguous and linked file allocation methods.

    8) Explain Segmentation.

    9) Explain inter-process communication.

    10) Write and explain monitor solution for producer-consumer problem.

    11) Explain the difference between hard and soft real time systems.

    12) Explain page fault and page replacement.