(3 Hours) **Total Marks: 80**

N.B. 1) Question **no.1 is compulsory**

2) Solve any **Three** questions from remaining five.

3) Assume suitable data wherever required.

Q1. a. Define Operating System and also explain objectives and functions of O.S. **10**

b. Consider the following set of processes, with the arrival times and the CPU burst times given in milliseconds. **10**

Process	Burst Time	Arrival Time
PI	15	0
P2	5	0
P3	13	0

Draw Gantt chart, calculate Turnaround Time, Waiting Time, Average Turnaround Time and Average Waiting Time for:
i) First-Come First-Served.
ii) Shortest Job First.

Q2. A What are the four conditions that create deadlock? Explain deadlock Prevention and avoidance techniques. **10**

B What is Scheduling? Also explain Short Term, Mid Term and Long Term Scheduling. **10**

Q3 A Given memory partitions of 100 KB, 500 KB, 200 KB, 300 KB, and 600 KB(in order), how would each off the first-fit, best-fit, and worst-fit algorithms place processes of 212 KB, 417 KB, 112 KB, and 426 KB (in order) ? Which algorithm makes the most efficient use of memory? **10**

B Explain demand paging with suitable example. **10**

Q4 A What is RAID? What are the different RAID levels? **10**

B Compare State full Server v/s Stateless Server with a proper example. **10**

Q5 A Why there is need for communication between two processes? Explain various modes of communication. **10**

b Explain the page replacement policies implement LRU, OPT, FIFO for the following Sequence : 0, 1, 2, 4, 3, 7, 1, 4, 2, 3.
Also calculate hits and faults. **10**

Q6 A What are preemptive and non-preemptive algorithms? Explain any two with the help of example. **10**

B Write short notes on Network O.S vs. Distributed O.S. **10**

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