

(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.** Define Operating System and also explain objectives and functions of O.S. **10**
- a.**
- 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 |
|---------|------------|--------------|
| P1      | 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.** What are the four conditions that create deadlock? Explain deadlock **10**
- A** Prevention and avoidance techniques.
- B** What is Scheduling? Also explain Short Term, Mid Term and Long Term Scheduling. **10**
- Q3** 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** What is RAID? What are the different RAID levels? **10**
- A**
- B** Compare State full Server v/s Stateless Server with a proper example. **10**
- Q5** Why there is need for communication between two processes? Explain **10**
- A** various modes of communication.
- b** Explain the page replacement policies implement LRU, OPT, FIFO for the following Sequence : 0, 1, 2, 4, 3, 7, 1, 4, 2, 3. **10**
- Also calculate hits and faults.
- Q6** What are preemptive and non-preemptive algorithms? Explain any two with **10**
- A** the help of example.
- B** Write short notes on Network O.S vs. Distributed O.S. **10**

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