

V / O.S / comp / CBGS / 22-11-16

Operating System

(3 Hours)



QP CODE : 581102

Total Marks: 80

- N.B.**
1. Q.no.1 is **compulsory**
 2. Attempt any **three** out of the remaining five questions
 3. Figures to **right** indicate **full** marks
 4. Assume suitable data if necessary but justify the same

Q.1. Attempt the following (Any four)

- a. What is Kernel? Describe briefly the approaches of designing Kernel. (5)
- b. Explain the difference between paging and Segmentation (5)
- c. Explain the effect of page size on performance of Operating System (5)
- d. Explain various I/O buffering techniques. (5)
- e. What do you mean by Busy Waiting? What is wrong with it? (5)

Q.2. a. Calculate hit and miss for the following string using page replacement policies – FIFO, LRU and Optimal. Compare it for the frame size 3 & 4.

1 2 3 2 1 5 2 1 6 2 5 6 3 1 3 6 1 2 4 3 (10)

b. What is a deadlock? Explain the necessary and sufficient conditions for the deadlock. Also suggest techniques to avoid deadlocks. (10)

Q.3. a. Explain an algorithm for producer-consumer problem (10)
 b. Explain the banker's algorithm in detail. (10)

Q.4. a. Explain the hardware support for paging (10)
 b. Assume the following processes arrive for execution at the time indicated and the length of cpu burst time given in msec. (10)

Job	Burst time	Priority	Arrival time
P1	8	3	3
P2	1	1	1
P3	3	2	2
P4	2	3	3
P5	6	4	4

For the above process parameters, find average waiting times and average turnaround times for the following scheduling algorithms- First Come First Serve, Shortest Job First, non preemptive priority and Round Robin (assume quantum=2 units)

Q.5. a. Explain LINUX operating system with Kernel, Memory management & scheduling. (10)
 b. Compare the following Disk scheduling algorithms using appropriate example- SSTF, FCFS, SCAN, C-SCAN, LOOK (10)

Q.6. Write notes on the following: (20)

- a. Resource Allocation Graph
- b. Process Control Block
- c. Demand Paging
- e. Scheduling in Linux system

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