Roll No. .....

Total Pages : 03

GSQ/D-24

1069

OPERATING SYSTEMS-I

BCA-352

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

1. (a) What is the difference between multiprogramming and multiprocessing ?

(b) What are the types of real time system ?

(c) What is Process ? Differentiate between a process and a program.

(d) Define System Calls. Explain the various system calls.

(e) What are necessary conditions for deadlock prevention ?

(f) What is Paging ? Explain.

(g) What is IPC ?

(h) What is internal and external fragmentation ? **8×2=16**

Unit I

2. Describe the functions of operating system as a resou manager. What are system calls ? How are th categorized ?

3. (a) Explain the architecture of operating system.

   (b) Differentiate between Time sharing and Real Ti operating system.

Unit II

4. Consider a system with one CPU and four jobs. Each j has a burst time, arrival time and priority as given belo Priorities are ranked as 0 (lowest) and 127 (highest)

Job	Burst Time (Millisecond)	Priority	Arrival Ti
J1	6	60	0
J2	8	70	3
J3	7	80	10
J4	3	127	9

Draw Gantt Chart for FCFS, SJF, Non-preemptive Prior RR (Quantum = 4). What is turn around time, wait time for each scheduling algorithms and also tell wh of the scheduling algorithms is having minimal aver waiting time ?

5. How does a machine implement context switch ? Describe a plausible sequence of activities that occur when a timer interrupt results in a context switch. 16

Unit III

6. Discuss Deadlock. Explain the Banker's Algorithm used for deadlock avoidance. How is it confirmed that the system state is safe or unsafe using the safety algorithm ? 16

7. (a) Explain the concept of segmentation. Explain the advantages and disadvantages of segmentation. 8

   (b) Explain fixed portioned memory scheme by giving suitable example. 8

Unit IV

8. What is Thrashing ? How does the system detect thrashing ? Once it is detected, what a system can do to eliminate this problem ? 16

9. What are file systems ? Describe the various mechanisms to improve the performance of file systems. Explain, how crash recovery is implemented in File systems. 16