B.E. Computer Technology Seven Semester

CT701 - Operating System

P. Pages : 2 **GUG/W/18/1856**

Time : Three Hours * 1 4 4 6 * Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.

1. a) Explain the structure of operating system with neat sketch. **8**

b) What are Parallel systems. Explain the advantages of parallel systems. **8**

OR

2. a) What do you mean by process? Explain Process Control Block (PCB) with neat Sketch. **8**

b) Explain user level threat and Kernel level thread. **8**

3. a) Why we need scheduler? Explain different types of schedulers used in operating system. **8**

b) Consider their are four processes P_1, P_2, P_3, & P_4. **8**

Process	Burst Time	Arrival Time
P_1	4	0
P_2	6	1
P_3	8	2
P_4	12	3

i) Draw a Gantt Chare
ii) Compute Turnaround time & waiting time using Round Robin, $(Q=2)$ & FCFS scheduling algorithm.

OR

4. a) Differentiate between direct & indirect interprocess communication. **8**

b) Demonstrate dining philosopher problem with algorithm. **8**

5. a) What is wait for graph? Explain how it is useful for detection of deadlock? **8**

b) How deadlock avoidance differ from deadlock prevention? Explain. **8**

OR

6. a) Discuss how to recover from deadlock? **8**

b) Consider following snap sheet & solve the problem by why Banker's algorithm of deadlock avoidance. **8**

Process	Allocation			Max			Available		
	R_1	R_2	R_3	R_1	R_2	R_3	R_1	R_2	R_3
P_1	0	1	2	0	0	2	1	2	0
P_2	1	0	0	1	5	0			
P_3	1	3	5	3	5	6			
P_4	0	3	2	0	6	5			

If a request from process P_1 arrives for $P_1 = [0,1,2]$, can request be granted & what will be the safe sequence.

7. a) Explain the differences between physical address space & logical address space. **8**

b) Explain segmentation & paging in detail. **8**

OR

8. a) Given the following string. **8**
1 2 0 1 2 0 3 1 2 4 5 1
Assume no. of frames 3. How many phase fault would occur for
i) LRU ii) FIFO
iii) Optimal

b) What is Belady's Anomaly? Explain with example. **8**

9. a) What are the main characteristics of capability list & access list? **8**

b) Discuss in brief threats to security in any computing environment. **8**

OR

10. a) Explain how protection could be achieved using Access List & Capability list. **8**

b) Explain following term with respect to protection. **8**
i) Revocation ii) Dynamic protection structure.

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