

**II B.Tech II Semester Supplementary Examinations, Nov/Dec 2005**  
**OPERATING SYSTEMS**

( Common to Computer Science & Engineering, Information Technology  
 and Computer Science & Systems Engineering)

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. Differentiate the following
  - (a) DMA Vs Interrupt driven I/O
  - (b) Programmed I/O Vs Memory Mapped I/O [8+8]
2. (a) What is Swapping? Explain the need for swapping.
  - i. Process Switching vs Context Switching
  - ii. Clock interrupt Vs I/O interrupt. [6+10]
3. What are the requirements for mutual exclusion? Explain them in detail. [8+8]
4. Consider the following snapshot of a system. There are no current outstanding queued unsatisfied requests available.

available			
r1	r2	r3	r4
2	1	0	0

	Current allocation				Maximum demand				Still needs			
Process	r1	r2	r3	r4	r1	r2	r3	r4	r1	r2	r3	r4
p1	0	0	1	2	0	0	1	2				
p2	2	0	0	0	2	7	5	0				
p3	0	0	3	4	6	6	5	6				
p4	2	3	5	4	4	3	5	6				
p5	0	3	3	2	0	6	5	2				

- (a) Compute what each process still might request and display in the columns labeled 'still needs'
- (b) Is this system currently in a safe or unsafe mode? Why?
- (c) Is this system currently deadlocked? Why or why not?
- (d) Which process, if any, are may become deadlocked?
- (e) If a request from p3 arrives for (0,1,0,0), can that request be safely granted immediately? In what state would immediately granting that whole request leave the system? Which process, if any, are may become deadlocked if this whole request is granted immediately? [2+2+3+3+6]

5. (a) Define Memory Management.  
(b) Explain in detail the requirements that memory management needs to satisfy [4+12]
6. (a) What are the criteria based on which scheduling policies are evaluated.  
(b) Describe round robbin and feedback scheduling policies. [8+8]
7. (a) Explain in detail the four terms field, record, file and database with respect to files.  
(b) List the objectives and the requirements for a file management system. [8+8]
8. (a) How resources of a computer system protected?  
(b) Explain user-oriented access control.  
(c) Explain data-oriented access control. [5+6+5]

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