



Code No: 823AA

R15**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****MCA III Semester Examinations, August - 2017****OPERATING SYSTEMS****Time: 3hrs****Max.Marks:75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A**5 × 5 Marks = 25**

- 1.a) What are system programs? [5]
- b) Distinguish between a process and a thread. [5]
- c) What are inverted page tables? [5]
- d) Explain different file access methods. [5]
- e) Explain how resource allocation graph is constructed. [5]

PART - B**5 × 10 Marks = 50**

2. What are time shared and real time systems? Explain them in detail. [10]
OR
- 3.a) What are operating system objectives and functions?
b) What are virtual machines? What is their significance? [5+5]
4. What is critical section problem? Discuss the various hardware solutions to critical section problem. [10]
OR
5. Explain real time scheduling using an example. [10]
6. Explain various LRU-Approximation page replacement algorithms. [10]
OR
7. What is thrashing? Why does it occur? What are different methods to handle thrashing. [10]
8. Define file. Discuss various file allocation strategies. Discuss the merits and demerits of various file allocation strategies. [10]
OR
9. What are the merits and demerits of tree structured directories and acyclic graph directory structure? [10]

10. Consider the following snapshot of a system:

	Allocation	max	available
	A B C D	A B C D	A B C D
P0	0 0 1 2	0 0 1 2	1 5 2 0
P1	1 0 0 0	1 7 5 0	
P2	1 3 5 4	2 3 5 6	
P3	0 6 3 2	0 6 5 2	
P4	0 0 1 4	0 6 5 6	

Answer following questions using banker's algorithm:

- What is the content of the matrix need?
- Is the system in a safe state?
- If a request from a process p1 arrives for (0,4,2,0) can the request be granted immediately? [10]

OR

11. What is a deadlock? Discuss various deadlock prevention strategies. [10]

—oo0oo—