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:

a) What is the content of the matrix need?

b) Is the system in a safe state?

c) 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]

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