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# Code No: 812AG

## **R13** JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD MCA II Semester Examinations, August - 2017 **OPERATING SYSTEMS**

### **Time: 3 Hours**

Note: This question paper contains two parts A and B. Part A is compulsory which carries 20 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

### PART - A

1.a)	What is a system call? How it is executed?	[4]	
b)	What is thread scheduling? Give an example of thread scheduling?	[4]	
c)	What is thrashing? Why it occurs?	[4]	
d)	Discuss about directory structure?	[4]	
e)	How to detect whether a deadlock occurred or not?	[4]	

### PART - B

Briefly explain typical functions of an Operating-System Kernel. 2.a)

What are the different types of operating systems? Explain them in detail. b) [4+4]

OR

- Discuss about the Operating System components. 3.a)
- Explain about distributed systems. b)
- Assume the following jobs are to be executed with one processor: 4.

	Job	Burst Time	Arrival
	1	10	3
	2	10	4
2	3	2	1
	4	11	2
	5	5	0

Give Gantt-Chart illustrating the execution of these jobs using RR (quantum =2) and Shortest Remaining Time First (Preemptive). Compare their performance in terms of average turn-around time, and average waiting time? [8]

- OR
- 5. Explain about readers writers problem. Give a solution to the above problem using semaphores. [8]

#### Max. Marks: 60

 $5 \times 4$  Marks = 20

 $5 \times 8$  Marks = 40

[4+4]

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- 6. Five pages, A, B, C, D, and E are referred by a process in the following order- A; B; C;B; E; A; D; A; B; E; A; B; C; D; E. If the page replacement algorithm is a) FIFO, calculate the number of page faults with empty frames of size 3? Compare its performance with optimal page replacement? b) LRU, calculate the number of page faults with empty frames of size 4 ? 3 compare its performance with optimal page replacement? [4+4] OR With a neat diagram explain the actions that take place when a page fault occurs? 7.a) b) Give an overview of continuous memory allocation strategies. [4+4]8. Discuss about free space management. [8] OR
  - Explain the three allocation methods in file system implementation Illustrate with proper 9. diagram. [8]
  - 10.a) Explain Banker's algorithm for deadlock avoidance.
    - b) What are the goals of protection?

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[8]

- en unsafe is. ---ooloo--- on ker.on 11.a) What is unsafe state? Differentiate between unsafe state and deadlock state.
  - b) Explain about capability based systems.

[4+4]