Paper Code: MCA311	Roll No.									

MCA
(SEM III) ODD SEMESTER EXAMINATION 2015-16
OPERATING SYSTEMS

[Time: 3 hrs.] **[Max. Marks: 100]**

Note- ***Attempt All Questions. All Questions carry equal marks*:-**

Q.1. *Attempt any **TWO** parts of the following;*

(a) What are the various services provided by an operating system. Explain how each provides convenience to the users.

(b) Explain the following terms –

(i) Real time system (ii) Multiprogramming system

(iii) Distributed system (iv) Batch processing system

(C). (i) Distinguish between system calls and system programs.

(ii) What are the main components of virtual machine? Briefly explain the purpose of each.

Q.2. *Attempt any TWO parts of the following;*

(a) For the given five processes arriving at time zero, in the order given with the length of CPU burst time in milliseconds:

Process	Burst time
P1	10
P2	29
P3	3
P4	7
P5	12

Consider the FCFS, SJF and RR (quantum 10 millisecond) scheduling algorithms for this set of processes. Draw the Gantt Chart and also calculate average waiting time of each. Which algorithms would give the minimum average waiting time?

(b) Explain the functioning of multilevel feedback queues scheduling algorithms.

(c) What is a process? Discuss different states of a process with the help of state diagram.

Also right the purpose of process control block (PCB).

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Q.3. *Attempt any **TWO** parts of the following;*

(a) Discuss Banker's & safety algorithms. In the context of Dijkstra's banker's algorithms discuss whether each of the following states is safe or unsafe. If a state is safe, show how it is possible for all processes to complete. If a state is unsafe, show how it is possible for dead lock to occur.

State A

	Current loan	maximum need
User (1)	1	4
User (2)	4	6
User (3)	5	8
	Available 2	

State B

	Current loan	maximum need
User (1)	8	10
User (2)	2	5
User (3)	1	3
	Available 1	

(b) Explain the following with suitable examples-

(i) Semaphores

(ii) Critical section

(c) What do you understand by cooperating processes Discuss producer consumer problem.

Q.4. *Attempt any **TWO** parts of the following;*

(a) What do you understand by storage fragmentation? Discuss fixed partition multiprogramming and variable partition multiprogramming.

(b) The disk given in the request for I/O to block on cylinders are 98.183,37,122,14,124,65,67. If the disk head initially at 53,then compute the total head movement for the following algorithms.

(i) FCFS scheduling

(ii) SSTF scheduling

(iii) SCAN scheduling

(C) Describe the following storage placement strategies with the help of examples-

(i) First Fit (ii) Best Fit (iii) Worst Fit

Q.5. *Write short notes on any **TWO** parts of the following;*

(a) Windows NT.

(b) Access Matrix and its implementation.

(c) Linux system.

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