Register Number: ……..

MCA DEGREE EXAMINATIONS: APRIL/MAY 2014

(Regulation 2009)

Second Semester

MASTER OF COMPUTER APPLICATIONS

MCA509: Operating Systems

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions

PART A (10 x 2 = 20 Marks)

1. Define Operating Systems.
2. What are the two types of real time systems?
3. Write about the different states of a process?
4. Define mutual exclusion
5. Differentiate process and a program.
6. What is a monitor?
7. Define deadlock. Give an example.
8. Given memory partitions of 100KB,500KB, 200KB,300KB,and 600KB in order, how would each of the first-fit, best-fit, and worst-fit algorithms place the processes of 212KB, 417KB,112KB,and 426KB(in order)?Which algorithm makes most efficient use of memory?
9. What is a bit vector?
10. What is the difference between a file and database?

PART B (5 x 16 = 80 Marks)

11. a) Define the essential properties of Distributed System and Multiprocessing system

(OR)

b) Define system call and Explain its types in detail

12. a) (i) Describe the differences among short-term, medium-term, and long term scheduling. (8)

(ii) What are the advantages in having different time-quantum sizes on different levels of a multilevel queuing system? (8)

(OR)

b) Consider the following set of processes, with the length of the CPU-burst time given in milliseconds.

Process	Burst Time
P1	11
P2	15
P3	4
P4	6
P5	10

The process are assumed to have arrived in the order P1, P2, P3, P4, P5 all at the time 0.

a. Draw Gantt chart using FCFS, SJF (a non preemptive) and round robin (Quantum=4) scheduling. (4)

b. What is the turnaround time and waiting time of each process for each of the scheduling algorithm given in **a.** (10)

c. Which of the schedules in part **a** results in minimal average waiting time? (2)

13. a) What is a semaphore? Explain with example.

(OR)

b) Explain banker's algorithm with example.

14. a) Explain paging with a neat diagram. What are the difference between paging and segmentation?

(OR)

b) When a page can be replaced? Discuss about various page replacement algorithms with example.

15. a) (i) Explain Free space management in detail. (8)

(ii) Write a note on directory structures. (8)

(OR)

b) Explain about disk scheduling algorithms in detail

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