

Total No. of Questions : 8]

[Total No. of Printed Pages : 3

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**MCA-201****M.C.A. II Semester**

Examination, November 2018

**Operating System****Time : Three Hours****Maximum Marks : 70**

- Note:** i) Attempt five questions.  
ii) All questions carry equal marks.

- Explain the following CPU scheduling algorithms:
  - Multilevel feedback Queue scheduling
  - Pre-emptive and non pre-emptive scheduling
- Consider the set of processes with the length of the CPU-burst time given in milliseconds:

Process	Burst time	Priority
P <sub>1</sub>	11	3
P <sub>2</sub>	2	1
P <sub>3</sub>	3	4
P <sub>4</sub>	2	5
P <sub>5</sub>	6	2

The processes are assumed to have arrived at time 0.

Draw the Gantt chart for the system using FCFS, SJF, RR and Non pre-emptive priority scheduling. Also calculate average turn around time and average waiting time of each of those scheduling.

- What is paging? Explain paging principle. How is it different from segmentation?
- Explain demand paging. Consider the following page reference string:  
4, 3, 2, 1, 4, 3, 5, 4, 3, 2, 1, 5  
Assuming 3 page frames and pure demand paging. How many page faults would occur for:
  - FIFO
  - LRU
  - OPTIMAL
- State Dining philosophers problem. Give a solution to the problem using semaphores.
- Consider the following snap-shot of a system

	Allocation	Max	Available
	A B C D	A B C D	A B C D
P <sub>0</sub>	0 0 1 2	0 0 1 2	1 5 2 0
P <sub>1</sub>	1 0 0 0	1 7 5 0	
P <sub>2</sub>	1 3 5 4	2 3 5 6	
P <sub>3</sub>	0 6 3 2	0 6 5 2	
P <sub>4</sub>	0 0 1 4	0 6 5 6	

Obtain the array need. Check the state of the system. If a request from process P<sub>1</sub> arrives for (0, 4, 2, 0) can the request be immediately granted.

- Explain about various disk space allocation methods with suitable example.

[3]

8. Answer any four of the following questions:

- a) What is process control block? What are the various elements of PCB?
- b) Describe following allocation algorithms:
  - i) Best fit
  - ii) First fit
  - iii) Worst fit
- c) Write a brief note on monitors and messages.
- d) Write a brief note on Directory system.
- e) What are feedback loops?
- f) Why performance monitoring and evaluation are needed in distributed file systems?

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