B.E.(with Credits)-Regular-Semester 2012 - Information Technology Sem VI

IT604 - Operating Systems

P. Pages : 2 **GUG/W/16/5384**

Time : Three Hours * 3 5 5 4 * Max. Marks : 80

Notes : 1. Same answer book must be used for all questions.
2. All questions carry marks as indicated.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.
5. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) What is multiprogrammed system? State objective of multiprogramming enlist & explain in brief various multiprogrammed operating system. **8**

b) Draw & explain layered file system. **8**

OR

2. a) Define file system? state & explain commonly used operations of file. **8**

b) Explain the following file allocation methods. **8**
i) Contiguous
ii) linked
iii) Indexed

3. a) Explain the concept of process. Draw a process transition diagram & explain various process states. **8**

b) Suppose The head of disk numbered 0 to 199 is currently it 140 previously at served at 120. if the queue of request is as follows. **8**
96,157,81,167,84,150,100,175 What is the total head movement to satisfy these request for fall disk scheduling algorithm.
i) FCFS ii) SSTF
iii) SCAN iv) LOOK

OR

4. a) explain context switch giving an example. **6**

b) consider the following set of processes :- **10**

PROCESS	BURST TIME	PRIORITY
P_1	7	3
P_2	9	2
P_3	2	1
P_4	1	4
P_5	3	5

Draw the Gantt chart & calculate the avg. turnaround & waiting time for.
i) FCFS ii) SJF
iii) Priority iv) Round Robin (Time Question = 1 ms)

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5. a) Define critical section. What are the requirements to solve critical- section problem. **8**

b) What is RACE conditions? Explain in brief. **8**

OR

6. Write an algorithm to implement a semaphore using. **16**
i) The SWAP Instruction.
ii) The test & set-instruction.

7. a) What is deadlock? What are the slips co present deadlock? **8**

b) Explain resource- request algorithms? **8**

OR

8. a) consider the following snapshot of system **10**

ALLOCATION					MAX				AVAILABLE			
	A	B	C	D	A	B	C	D	A	B	C	D
P_0	1	1	2	3	1	1	2	3	2	6	3	1
P_1	2	1	1	1	2	8	6	1				
P_2	2	4	6	5	3	4	6	7				
P_3	1	7	4	3	1	7	6	3				
P_4	1	1	2	5	1	7	6	7				

i) What is content of need Matrix
ii) Is the system in safe state.
iii) if request from P_1 (1,5,3,1) can the request be granted immediately?

b) Explain in detail resource allocation graph. **6**

9. a) consider the following page reference string **12**
A, B, C, D, B, E, F, A, B, C, G, F, C, F, A, B, C.
How many page faults would occur for the foll page Replacement algo. assuming three & four frames?
i) FIFO ii) Optimal iii) LRU

b) Compare. **4**
i) Logical & Physical address.
ii) Internal & external fragmentation.

OR

10. Write short notes on. **16**
i) Belady's anomaly ii) Threshing
iii) locality of references iv) Page replacement algorithm.

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