

**FACULTY OF INFORMATICS****B.E. 3/4 (IT) I – Semester (New) (Main) Examination, Nov. / Dec. 2012****Subject : Operating Systems****Time : 3 hours****Max. Marks : 75****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****PART – A (25 Marks)**

1. What are the five major activities of an operating system in regard to file management? (3)
2. What is process control block? Draw its structure. (3)
3. When does a 'race condition' occur? (3)
4. How does the signal ( ) operation associated with monitors differ from the corresponding operation defined for semaphore? (3)
5. Enlist the different file allocation methods to effectively utilize the disk space. (2)
6. Define : seek time, latency time and transfer time. (3)
7. What is the purpose of copy on write technique? (2)
8. What is encryption and decryption? (2)
9. What is an access matrix? (2)
10. What type of operating system is Windows NT? (2)

**PART – B (50 Marks)**

- 11.a) What are the advantages of designing an operating system using a virtual machine architecture? (5)
- b) Describe the differences among short-term, medium-term and long-term scheduling. (5)
12. Consider the following set of process, with the length of the CPU burst given in millisecs.

Process	Burst time	Priority
P <sub>1</sub>	10	3
P <sub>2</sub>	1	1
P <sub>3</sub>	2	3
P <sub>4</sub>	1	4
P <sub>5</sub>	5	2

The process are assumed to have arrived in the order P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>, P<sub>4</sub>, P<sub>5</sub> all at time 0 seconds. (10)

- a) Draw Gantt chart for FCFS, SJF, non preemptive
  - b) Find the turn around time of each process for each of the scheduling algorithm.
  - c) Find waiting time.
  - d) Which algorithm in part 'a', results in the minimum average waiting time.
- 13.a) Explain why sharing a reentrant module is easier when segmentation is used than when pure paging is used. (5)
  - b) What is file mounting? What are cascade mounts? Explain. (5)

- 2 -

- 14.a) What is thrashing? How can working set model facilitate in controlling thrashing? (5)
- b) What are the strategies for managing memory free space? (5)
- 15.a) Explain about the physical memory and virtual memory management. (5)
- b) What are interrupts? Explain the basic interrupt – driven I/O cycle. (5)
- 16.a) How is the access matrix useful in providing protection? (5)
- b) Explain fire walling to protect systems and networks. (5)
17. Write short notes on the following :
- a) Time sharing (2)
- b) Multilevel feedback queue (3)
- c) Atomic transaction (2)
- d) RAID structure (3)

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