

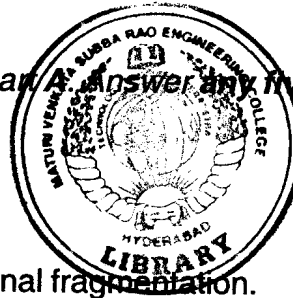
FACULTY OF INFORMATICS
B.E. 3/4 (IT) I Semester (Main) Examination, December 2011
OPERATING SYSTEMS

Time: 3 Hours]

[Max. Marks: 75

Note : Answer all questions from Part A. Answer any five questions from Part B.

PART – A



(10×2.5=25 Marks)

1. Explain the difference between internal and external fragmentation.
2. What is Dual Mode Operation ?
3. What are the advantages of RAID ?
4. What is the purpose of command interpreter ?
5. What are the two models of inter-process communication ? What are the strengths and weaknesses of the two approaches ?
6. What is a Process Control Block ?
7. What are two advantages of encrypting data stored in the computer system ?
8. What is Belady anomaly ? State the page replacement algorithms that suffer from Belady anomaly.
9. Define multi-programming and multi-tasking.
10. Why spin locks are not appropriate for single-processor systems yet are often used in multiprocessor systems ?

PART – B

(5×10=50 Marks)

11. a) Describe the differences between symmetric and asymmetric multiprocessing. What are the three advantages and one disadvantage of multiprocessor systems ? (2+3)
- b) Discuss the two models of inter-process communication. What are the strengths and weaknesses of the two approaches ? (3+2)

12. Consider the following page reference string : 1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6. How many page faults would occur for the following page replacement algorithms, assuming three and four frames ? Assuming frames are initially empty.

- i) FIFO replacement
- ii) LRU replacement
- iii) Optimal replacement.

10

13. a) Define system call and system program.

1

b) Explain any three processor scheduling algorithms, with examples.

9

14. Consider the following snapshot of a system :

	Allocation	Max	Available
	A B C D	A B C D	A B C D
P0	0 0 1 2	0 0 1 2	1 5 2 0
P1	1 0 0 0	1 7 5 0	
P2	1 3 5 4	2 3 5 6	
P3	0 6 3 2	0 6 5 2	
P4	0 0 1 4	0 6 5 6	

Answer the following questions using the Banker's algorithm :

a) What is the content of the matrix *need* ?

b) Is the system in a safe state ?

c) If a request from a process P1 arrives for (0, 4, 2, 0) can the request be granted immediately ?

10

15. What is paging and segmentation ? Explain memory management with paging and segmentation.

(2+8)

16. a) Discuss the various Disk space allocation methods.

5

b) Discuss any three Disk scheduling algorithms.

5

17. How operating system provides system protection and security ?

10