

NOV-DEC
2011

[4063] – 351

T.E. (Information Technology) (Semester – I) Examination, 2011
OPERATING SYSTEMS (New)
(2008 Pattern)

Time : 3 Hours

Max. Marks : 100

Instructions : 1) Answer to the **two** Sections should be written in **separate** answer books.

2) Figures to the **right** indicate **full** marks.

3) Neat diagrams must be drawn **wherever** necessary.

4) Assume suitable data **wherever** necessary.

SECTION – I

1. a) Explain various architectures of Operating System with diagram. 8
- b) Write a shell program to check if given string is palindrome or not. 4
- c) What is a system call ? Explain its significance. 4

OR

2. a) Describe in short various functions performed by Operating System. 8
- b) Write a short note on : 8
- a) Real Time Operating System
- b) AWK programming.
3. a) Explain following scheduling algorithms. 9
- 1) FCFS
- 2) SJF
- 3) RR
- b) Explain the following functions with reference to c 9
- pthread_create()
- pthread_join()
- fork().

OR

4. a) Explain a generic way of scheduling the processes which will cater to requirements of scheduling criteria provided by user 9
- b) Explain with diagram the scheduling method used in Unix. 9

P.T.O.



5. a) Explain the following functions (along with parameters passed) with reference to semaphore programming in c. 8
- Semget()
sem_post()
sem_init()
- b) Explain how resource allocation graph determines a deadlock. Also discuss an integrated deadlock strategy. 8

OR

6. a) What is a Monitor ? Write a monitor solution for dining philosophers' problem. 8
- b) What is the significance of classical problems in operating system ? Give example related to at least two classical problem. 8

SECTION – II

7. a) How memory partitioning is done with buddy system. 8
- b) Compare paging with segmentation w.r.t the amount of memory required by the address translation structures in order to convert virtual addresses to physical address. 4
- c) Free memory holes of sizes 15K, 10K, 5K, 25K, 30K, 40K are available. The processes of size 12K, 2K, 25K, 20K are to be allocated. How processes are placed in first fit, best fit, worst fit. Calculate internal as well as external fragmentation. 6

OR

8. a) Explain the memory management in Linux operating system ? 8
- b) A process contains following virtual pages on disk and is assigned a fixed allocation of four page frames in main memory. Show the successive pages residing in the four frames using FIFO, LRU, Optimal. 8
- 1, 0, 2, 2, 1, 7, 6, 7, 0, 1, 2, 0, 3, 0, 4, 5, 1, 5, 2
- c) What is thrashing ? 2



9. a) What are the different buffering ways in I/O buffering ? 8
- b) Assume the disk head is initially positioned over track 100. For the disk track request 27, 129, 110, 186, 147, 41, 10, 64, 120 how disk scheduling is done for C-Scan, Scan, Look, C-look calculate average seek length and show the tracing of request. 8

OR

10. a) Explain Unix file system. 8
- b) Explain free space management. 8
11. a) What is the difference between passive and active security threats ? 6
- b) In what way user authentication can be done. 6
- c) What is asymmetric encryption algorithm ? 4

OR

12. a) Explain the following : 8
- i) Trojan Horse
 - ii) Trap Door
 - iii) Logic bomb
 - iv) Stack and buffer overflow.
- b) What is Morris internet worm ? 8