Roll No. | | | | | | | | | | |

B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2014

INFORMATION TECHNOLOGY

Seventh Semester

CS 054 UNIX INTERNALS

(Regulations 2002)

Time: 3 Hours | Answer ALL Questions | Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. What are system calls?
2. What is the use of the shell?
3. What happens during a context switch?
4. Give the difference between user mode and kernel mode.
5. Give the structure of the header of a buffer in the buffer cache.
6. Mention the use of the *lseek* system call.
7. How is a thread different from a process?
8. Write the algorithm that the kernel executes to schedule a process.
9. What are device drivers?
10. What is swapping? What is the use of the swap map?

Part – B (5 x 16 = 80 marks)

11. (i) Explain the UNIX system architecture with a neat diagram. (8)
(ii) Write a shell program that will take two numbers as input and will find the product of the numbers and displays the result. (8)

12. a) Explain the major kernel data structures that are used by the file subsystem and the process subsystem. (16)

(OR)

b) (i) Explain the different states in which a process can be with a state transition diagram. (8)
(ii) List different reasons for which processes go to sleep. Discuss about the different issues that need to be considered by the kernel for the sleep of a process. (8)

13. a) Explain the different scenarios that the kernel may follow in *getblk* algorithm to allocate a buffer for a disk block. (16)

(OR)

b) Explain how the following system calls are implemented: (16)
(i) creat
(ii) read

14. a) What comprise the context of a process? (16)

(OR)

b) Explain the implementation of the following system calls: (16)

(i) fork

(ii) exit

15. a) Explain in detail the data structures used by the kernel for demand paging. (16)

(OR)

b) Discuss how inter-process communication is achieved using message queues. (16)