

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**  
**B. Tech IV Year I Semester Examinations, November/December - 2016**  
**LINUX PROGRAMMING**  
**(Computer Science and Engineering)**

**Time: 3 Hours****Max. Marks: 75**

**Note:** This question paper contains two parts A and B.  
Part A is compulsory which carries 25 marks. Answer all questions in Part A.  
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART-A****(25 Marks)**

1. a) What are filters? List out various filters available in linux. [2]
- b) Explain command substitution [3]
- c) Distinguish between dup() and dup2() system calls. [2]
- d) Explain the functionality of fcntl() function. [3]
- e) Explain the sleep() function with syntax. [2]
- f) What is the difference between wait() and waitpid()? [3]
- g) Differentiate between unnamed and named pipes. [2]
- h) With the help of syntax explain popen() function. [3]
- i) Explain the necessity of socket address structures. [2]
- j) Explain how to perform IPC between processes over a network. [3]

**PART-B****(50 Marks)**

2. a) Explain various process utilities available in linux.
- b) Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it. [5+5]

**OR**

3. a) Explain various patterns and actions in awk.
  - b) Write an awk script to perform simple arithmetic operations. [5+5]
4. a) Explain the support given by kernel for files in detail.
  - b) What do you mean by a hole in a file? How does the use of lseek() result in hole in a file? Explain with an example program. [5+5]

**OR**

5. Explain the file and record locking techniques with relevant example code snippet. [10]
6. a) Explain the layout of a C program image in main memory.
- b) Define orphan process. Write a program to illustrate the orphan process concept. [5+5]

**OR**

7. Explain the below system calls with the help of syntax and examples:  
a) kill      b) raise      c) alarm      d) pause      e) abort [10]

8. a) Describe the API provided by linux for semaphores.
- b) Write a program for locking a file using semaphore. [5+5]

**OR**

9. a) Define unnamed pipe? How do we create unnamed pipe? Explain the limitations of unnamed pipe.
- b) Write a program to accept the two integer numbers accepted by child, add them and result should be passed to parent. Parent process should print result on the screen using pipes. [5+5]

10. Describe Socket system calls used for connectionless protocol with syntax and usage. [10]

**OR**

11. a) Compare the IPC functionality provided by message queues with shared memory.
- b) Explain how to handle multiple simultaneous clients. [5+5]