



Name :

Roll No. :

Invigilator's Signature :

CS/BCA/SEM-5/BCA-E-501A/2011-12

2011

ADVANCED UNIX AND SHELL PROGRAMMING

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

i) Which of the following system call verifies the integrity of a file system ?

- a) Tee
- b) Fesk
- c) Task
- d) None of these.

ii) What \$ expr 10 – 20 returns ?

- a) 10
- b) – 10
- c) Syntax error
- d) None of these.

iii) To control new window and communicating with it we use

- a) Fork
- b) Mpx
- c) Mpx forks
- d) none of the above.



- iv) When kernel releases an inode it actually
 - a) increments the in-core count
 - b) decrements the in-core count
 - c) increments the disk core count
 - d) decrements the disk core count.
- v) PID of init process is
 - a) 0
 - b) 1
 - c) 2
 - d) - 1.
- vi) File descriptors of standard input, output and error are respectively
 - a) 2, 1, 0
 - b) 1, 1, 1
 - c) 0, 1, 2
 - d) - 1, 0, 1.
- vii) In Unix operating system interacts with the user.
 - a) Kernel
 - b) Shell
 - c) Hardware
 - d) None of these.
- viii) Processing in Unix can communicate with each other using
 - a) Path
 - b) Line
 - c) Pipes
 - d) none of these.
- ix) Every open file has an associated "current file offset", normally
 - a) a negative integer
 - b) a float number
 - c) a non-negative integer
 - d) none of these.
- x) The shell metacharacter \$# represents
 - a) Number of arguments supplied to the shell script
 - b) Total number of files in the current directory
 - c) Total number of users who have logged in
 - d) Total number of processes running in the background.



GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. a) Name three mechanisms which are adopted for interprocess communication in UNIX.
b) List down the common features they share. $2 + 3$
3. How system call is related with mounting and unmounting a file system. Differentiate su and su-brain. $2 + 3$
4. Describe the file structure in UNIX.
5. Explain the following commands :
 - a) mkdir
 - b) grep.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

6. a) Write a short note on memory mapped I/O. Write the advantages of swapping and demand paging. $4 + 3$
b) What is a signal ? Write down the classifications of signal and explain how they are handled by kernel.
 $1 + 3 + 4$
7. a) Describe scheduling process. 4
b) Explain how the semaphores are created. 4
c) What is socket ? Write the usage of it. $1 + 2$
d) What are projection faults ? Why does it happen ? $2 + 2$



8. a) What is inter-process communication in UNIX ?
b) How pipe system call is used in inter-process communication ? Explain with an example.
c) Describe new process creation with fork system call.
d) How are exec system calls used with fork to run a separate process ? $3 + 4 + 4 + 4$
9. a) What is a reliable signal ? Explain the four primary features of reliable signals.
b) Write in detail about the interrupted system calls.
c) Write in detail about kill and raise functions. $5 + 5 + 5$
10. a) What is process table ? What is an advantage of executing a process in background ?
b) Write a C program using process related system calls to create a child process from a parent process, which shows PID, PPID in both parent and child.
c) Why is signal unreliable ? $(2 + 3) + 7 + 3$
11. Write shot notes on any *three* of the following : 3×5
- a) Open server
 - b) Super Block
 - c) Swapping strategy
 - d) Umask and chmod
 - e) Inode.