



Name :
Roll No. :
Invigilator's Signature :

CS/MCA/SEM-3/MCA-302/2011-12

2011

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 × 1 = 10

- i) The & command is used to
 - a) Make the job run faster
 - b) Run it in the background
 - c) Stop a job
 - d) Abort the process.

- ii)

```
int main ()  
{  
fork ( ); fork ( ); fork ( ); fork ( );  
printf ("Hello");  
return 0 ;  
}
```

How many 'Hello' will print ?

- a) 4
- b) 14
- c) 16
- d) 10.



- iii) The shell parameter \$! represents
 - a) Name of executed command
 - b) PID of current shell
 - c) Exit status of last command
 - d) PID of last background job.
- iv) We can get the name of the current month by using the command
 - a) date + %m
 - b) date + %M
 - c) date + %h
 - d) none of these.
- v) Which of the following processes has the PID 1 ?
 - a) Kernel
 - b) Unix
 - c) Init
 - d) Shell.
- vi) What is the significance of -l option to ls command ?
 - a) Multicolumnar output
 - b) Sorts listing by last modification time
 - c) Recursive list
 - d) Marks executables with *, directories with / and symbolic links with @
- vii) Which of the following commands creates a process ?
 - a) cat
 - b) ls
 - c) cd
 - d) pwd.
- viii) Global file information about disk uses are stored in
 - a) Inode Block
 - b) Boot Block
 - c) Super Block
 - d) Data Block.
- ix) Among the under mentioned utilities faster search is achieved through
 - a) egrep
 - b) grep
 - c) fgrep
 - d) wgre.



- x) What is the binary representation of the permission :
rwxr-xrw- ?
- a) 656
 - b) 420
 - c) 756
 - d) 746.

GROUP – B

(Short Answer Type Questions)

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

2. a) What is Kernel ? What is Shell ?
- b) What is the difference between absolute and relative permission ?
- c) What is zombie state ? $1 + 2 + 2$
3. a) Why is the shell called a “Command Interpreter” ?
- b) What is the significance of the PID and the PPID ?
- c) What is a daemon ? What is Job ? $2 + 1 + 2$
4. a) If x has the value 10, what are the values of
 (i) $x\$\$x\$\$$ (ii) $\$\$x\$\$$?
- b) What do you mean by command substitution ? Provide example.
- c) What are the differences between absolute path and relative path ? $1 + 2 + 2$
5. What is the significance of read, write and execute on a directory ?
6. What do the following shell parameters stand for ?
 i) $\$!$ ii) $\$\#$ iii) $\$\@$ iv) $\$*$ v) $\$\@$.

GROUP – C

(Long Answer Type Questions)

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

7. a) Write a shell script that will compile & execute all C files in the current directory.



- b) Describe the utility of umask. Is umask user-specific or system-specific ? What will be the default permission for files if umask value is 023 ?
- c) Describe in detail the different components of I-node table. 5 + (2 + 2 + 1) + 5
- 8. a) 'Unix is a Multiuser System OS'. Explain.
- b) Describe Race Condition & Critical Section ?
- c) What is the utility of Shell & Kernel ? 3 + (3 + 3) + (3 + 3)
- 9. a) Describe the various OSI Layers.
- b) With the help of proper diagram, explain the various states of a process. Give a brief statement describing each state.
- c) Explain Ethernet/MAC and IP address. 5 + 5 + 5
- 10. a) What is mounting ? Explain with an example.
- b) Discuss the utility of wild card characters. With respect to Is, explain the following :
Is - I file
Is ab ? cd
Is a [b-d][2-4]*d
- c) Write a shell script that will display the factorial of a number supplied as command line argument. The number will be passed into a function, which will calculate and return the factorial to the calling statement. 4 + (2 + 3) + 6
- 11. a) What are system variables ? Give description of the following :
HOME, PATH, LOGNAME, PWD, PSI, PS2, SHELL, IFS
- b) Write a shell script to enter elements into an array & display the summation of all the elements. The user will enter the number of elements in the array and the individual elements from the keyboard. 2 + 8 + 5