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 : $10 \times 1 = 10$

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 – It option to Is 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) Is
   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) xx (ii) xx ?

   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) $0.

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 scipt 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