

## BCA-502

### UNIX AND SHELL PROGRAMMING

Time Allotted: 3 Hours

Full Marks: 70

*The questions are of equal value.*

*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. Answer all questions.

10×1 = 10

(i) Double quotes protect all characters but permit

- (A) variable evaluation                      (B) command substitution  
(C) both (A) and (B)                        (D) piping

(ii) In Linux, to echo a string and keep the cursor on the same line, you have to use

- (A) the `-e` option                            (B) the escape sequence  
(C) both (A) and (B)                        (D) either (A) and (B)

(iii) The user startup file for Bourne shell is stored in the home directory with the name

- (A) `cshrc`                                      (B) `.init`  
(C) `.login`                                    (D) `.startup`

(iv) The Unix file system is characterized by

- (A) a hierarchical structure                (B) the protection of file data  
(C) the ability to create and delete files (D) all of these

(v) Process switches from user modes to kernel modes is known as

- (A) context switching                        (B) mode switching  
(C) privilege changing                        (D) process switching

- (vi) The password encryption file is stored in the file
  - (A) /etc/passwd
  - (B) /etc/shadow
  - (C) /etc/group
  - (D) both (A) and (B)
  
- (vii) The alias command can be used in Unix to
  - (A) assign the same name to two files
  - (B) change the name of a file
  - (C) produce a listing of the login ids of all users in the system
  - (D) none of these
  
- (viii) The directory file in Unix contains
  - (A) only file names
  - (B) only inode numbers
  - (C) both of these
  - (D) super block
  
- (ix) The \$! represents
  - (A) PID of last background job
  - (B) name of executed command
  - (C) number of arguments specified in command line
  - (D) exit status of last command
  
- (x) What will be the output of test \$x - gt \$y (when x = 7.2 and y = 7)
  - (A) 1
  - (B) 0
  - (C) error
  - (D) command not valid

**GROUP B**  
**(Short Answer Type Questions)**

Answer any *three* questions.

3×5 = 15

- 2. (a) Explain the architecture of UNIX operating system. 3
- (b) What do you mean by positional parameters in shell programming? 2
  
- 3. (a) What is umask? How can file permission be defined with it? 3
- (b) What is touch command? Explain with an example? 2

- 4. What is inode in the UNIX file system? List down the main fields consisting a disk inode. What is the difference between disk inode and in-core-inode? 2+2+1
- 5. What is grep and sed command? Describe their function with example.
- 6. Write a shell script that will accept a pattern "printf" and a file name from the user and display all the lines containing the pattern "printf" within that file. 5

**GROUP C**  
**(Long Answer Type Questions)**

Answer any *three* questions. 3×15 = 45

- 7. (a) Perform the following operation on the file, containing employee data (emp.lst) in text format and each field is delimited by (:): 4×3=12
  - (i) To cut the 2<sup>nd</sup>, 3<sup>rd</sup>, and 6<sup>th</sup> fields of a file and display.
  - (ii) To sort on 4<sup>th</sup> field of the file numerically
  - (iii) To display 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> lines of the file.
  - (iv) To replace the field delimiter (:) by (|)
- (b) Explain \$#, S\*, \$@ special parameters of shell. 3
- 8. (a) What is function of test command? 3
- (b) Write a shell script which will take a word and file name. If the file exists, then it finds the word from the given file name, it will display the lines containing the word, otherwise it will display "Records not found". 5
- (c) How can you make out whether two files are copied or linked? 2
- (d) Describe the two main functions of init. What is the significance of run level 0, 1 and 6? 2+3
- 9. (a) A UNIX file system has 512 KB block size with 32 bit address. The inode has 10 direct, one single indirect, one double indirect and one triple indirect addresses. What is the maximum file size it can access? 7
- (b) Describe the layered architecture of UNIX operating system. Write down the services provided by the UNIX kernel the context of a process. 8

- 10.(a) What is the difference between process run with & and run with nohup? 2  
(b) What do you mean by job scheduling in UNIX? Explain with the help of proper example. 5  
(c) Explain the difference between (i)ls -l and ls -lt (ii) ls -lu and ls -lut. 4  
(d) Describe init and getty process for logging the system. 4
- 11.(a) Write a shell script to print all prime numbers between 1 to n (must be input by user). 7  
(b) Write a shell programming to generate Fibonacci series up to n number. 8
12. Write short notes on any *three* of the following: 3×5  
(a) Interprocess communication  
(b) UNIX File System  
(c) Shell's Treatment of command line  
(d) Vi editor  
(e) Filter in UNIX.