

Time: 3 Hours

**DECEMBER 2012**

Max. Marks: 100

*PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.*

**NOTE: There are 9 Questions in all.**

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions, answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

**Q.1 Choose the correct or the best alternative in the following: (2×10)**

a. Which of these is not a common UNIX shell discussed in class?

- (A) bash (B) sh  
(C) fresh (D) ksh

b. In ksh, what is the difference between the expressions VAR and \$VAR?

- (A) VAR refers to a variable name and \$VAR to its value  
(B) VAR refers to a variable value and \$VAR to its name  
(C) VAR refers to an integer variable and \$VAR to a string variable  
(D) Both expressions refer to the same thing

c. Which of these expressions shows the proper way to add the directory /usr/bin to your path

- (A) PATH+=/usr/bin (B) PATH=/usr/bin  
(C) \$PATH:/usr/bin (D) PATH=\$PATH:/usr/bin

d. What is effect of the command alias up2 “cd ../..”?

- (A) typing “cd ../..” at a shell prompt causes the shell to print “up2”  
(B) typing “cd ../..” at a shell prompt causes the shell to print “up2”  
(C) you immediately go up two levels in the directory tree and a new alias is created  
(D) an error message is printed

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- e. Which of the following is not a benefit of the fact that many UNIX commands operate on plain ASCII text files?
- (A) the same file can be used by many programs
  - (B) output to the terminal and to files can be done in the same way
  - (C) most current UNIX installations have a graphical user interface
  - (D) these commands can be used as filters for the output of other commands
- f. What is the default datatype of variables in ksh shell scripts?
- (A) integer
  - (B) floating point
  - (C) character
  - (D) string
- g. Which of these situations would cause an error message to be printed after typing the command “my\_script” on the command line, assuming that my\_script is a ksh script ?
- (A) my\_script does not have execute permission set
  - (B) the current working directory is not in the PATH
  - (C) both (A) and (B)
  - (D) neither (A) and (B)
- h. What is the meaning of the expression `${sports[*]}` in a ksh script?
- (A) all of the elements of the array sports
  - (B) the number of elements in the array sports
  - (C) the first element in the array sports
  - (D) I love sports!
- i. In a ksh script, how does one indicate the beginning and end of a block of statements in a while loop?
- (A) with { and }
  - (B) with [ and ]
  - (C) with while and elihw
  - (D) with do and done
- j. What is the default list upon which a for loop operates in a ksh script (i.e. a script contains “for x” rather than “for x in y”) ?
- (A) the list of files in the current working directory
  - (B) the list of currently running processes
  - (C) the list of arguments to the script
  - (D) the list 1, 2, 3, 4, ...

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**Answer any FIVE Questions out of EIGHT Questions.**  
**Each question carries 16 marks.**

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**Q.2** a. What is an operating system ? Discuss UNIX Architecture. **(8)**

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- b. Explain error handling in UNIX system function. Write a function to show how can errors be handled. (8)
- Q.3** a. Explain the functions used in UNIX to change file access permission. (8)
- b. What is the purpose of following functions? Explain briefly using example. mkdir, rmdir, chdir, fchdir (8)
- Q.4** a. Discuss Buffering in detail. What is the goal of buffering? Explain three types of buffering. (8)
- b. Explain standard I/O Efficiency. (4)
- c. How can encrypted password be obtained from a shadow file? (4)
- Q.5** a. Explain fork and vfork function in detail giving syntax of both the functions. (8)
- b. Write a note on exit functions. In how many ways a process can terminate?(8)
- Q.6** a. Explain different types of Terminal logins. (8)
- b. Write about characteristics of sessions and process groups. (8)
- Q.7** Write brief notes on the following:
- (i) Kill and raise function (8)
- (ii) Alarm and pause function (8)
- Q.8** a. What is daemon processes? Explain its Characteristics. (8)
- b. Write about four functions that provide line control capability for terminal devices. (8)
- Q.9** How is Semaphores implemented? Explain with example. (16)