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(Knowledge for Development)
KIBABII UNIVERSITY

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

**END OF SEMESTER EXAMINATIONS
YEAR FOUR SEMESTER ONE EXAMINATIONS**

**FOR THE DEGREE OF
(COMPUTER SCIENCE)**

**COURSE CODE : CSC413
COURSE TITLE : UNIX PROGRAMMING.**

DATE: 20 /05/2022

TIME: 9:00 A.M – 11:00 A.M.

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE (COMPULSORY) [30 MARKS]

- a) Explain sort command with its options **[2 Marks]**
- b) What information is presented when the following commands are entered?
- I. cut
 - II. ifconfig
 - III. ps
 - IV. netstat **[4 Marks]**
- c) Differentiate comm and diff command. **[4 Marks]**
- d) With suitable example, bring out the difference between absolute and relative pathnames. **[6 Marks]**
- e) i. Which command is used for listing file attributes? **[3 Marks]**
ii. Explain the significance of each field **[3 Marks]**
- f) File current permissions are rw_r_xr_. Specify chmod expression required to change for the following using both relative and absolute methods. **[8 Marks]**
- i) rwxrwxrwx
 - ii) r--r-----
 - iii) -----
 - iv) ---r--r--

QUESTION TWO [20 MARKS]

- a) What is the output of the following?
- (i) ls [ijk]*doc
 - (ii) [A-Z]????*
 - (iii) *. [! s] [! h]
 - (iv) * [!0-9] **[4 Marks]**
- b) Explain with a neat diagram an architecture of UNIX Operating System. **[6 Marks]**
- c) Describe the zombie processes **[4 Marks]**
- d) Describe a Shell and Briefly outline the shell interpretive cycle **[6 Marks]**

QUESTION THREE [20 MARKS]

- a) Analyze the code and explain its output.
- i. `$ echo 'The special character $ echo hello and | ls chap*'`
 - ii. `grep /bin/bash$ /etc/passwd | wc -l` [4 Marks]
- b) Describe the general UNIX file API's with syntax and explain each field in details. [4Marks]
- c) How can we pass arguments to a script in Linux? And how to access these arguments from within the script? [6 Marks]
- d) Write a shell script that prompts the user for a name of a file or directory and reports if it is a regular file, a directory, or another type of file. Also perform an ls command against the file or directory with the long listing option. [6 Marks]

QUESTION FOUR [20 MARKS]

- a) Explain step by step in terms of stdin and stdout what the following Unix command does:
`ls -l ../BigDir | grep "^d" >> BigDirList 2> MyLog` [4 Marks]
- b) Describe how text manipulation is done in vi. [4 Marks]-
- c) Write a program using shell scripting that will output the following:
Bash version 4.0.33(0)-release...
Welcome 0 times
Welcome 2 times
Welcome 4 times
Welcome 6 times
Welcome 8 times
Welcome 10 times [6 Marks]
- d) Describe how remote access is done in Unix, detail it. [6 Marks]

QUESTION FIVE [20 MARKS]

Use the information displayed below to answer questions i to iv: Give the Output for Each.

```
$ cat cars
```

```
chevy novass 79 60
ford  mustang 65 45
volvo gl      78 102
ford  ltd     83 15
chevy nova   80 50
honda accord 81 30
ford  thundbd 84 10
chevy impala 62 85
ford  bronco  87 25
```

- i. tail +6 cars [4 Marks]
- ii. grep "^[^]* *[^]* *[6-8][14]" cars [6 Marks]
- iii. grep chevy cars | sort -n -k4 [4 Marks]
- iv. sort -nk3 cars | grep "[^0]\$" [6 Marks]