(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR

YEAR FOUR SEMESTER ONE EXAMINATIONS
YEAR FOUR SEMESTER ONE EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE
COMPUTER SCIENCE

COURSE CODE : CSC413

COURSE TITLE : **UNIX PROGRAMMING.**

DATE: 18 /06/2021 **TIME:** 09:00 A.M – 11:00 A.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO

QUESTION ONE [COMPULSORY] [30 MARKS]

a) Explain tee commands. **[2 Marks]**

b) What information is presented when the following commands are entered?

I. who

II. passwd

III. bc

IV. script **[4 Marks]**

c) Differentiate telnet and ftp command. **[4 Marks]**

d) Explain in detail foreground and background jobs. Give example. **[6 Marks]**

e) Determine whether the following statements are true/false

i. Only one set (user, group, other) of permission can be changed at once using the symbolic method.

ii. The chown command can be used to change the owner and group of a file.

iii. The user sysadmin will be able to read a file because they own it.

iv. The user sysadmin will be able to change the permissions of a file because they own it.

v. A user cannot delete a file if they do not own it.

vi. The "execute" permission is never set on files by default. **[6 Marks]**

f) Describe the reason why shell scripts are written. **[4 Marks]**

g) Describe in detail about the structure of UNIX. **[4 Marks]**

QUESTION TWO [20 MARKS]

a) Distinguish between $$ and $! **[4 Marks]**

b) What are some common shells and what are their indicators **[6 Marks]**

c) Describe the zombie processes **[4 Marks]**

d) Describe the Shell's responsibilities **[6 Marks]**

QUESTION THREE [20 MARKS]

a) Explain

i. special parameters

ii. special variable **[4 Marks]**

b) Analyze the code and give its output or Explain its output.

i. $ echo 'The special character $ echo hello and | ls chap*'

ii. grep /bin/bash$ /etc/passwd | wc -l **[4 Marks]**

c) 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]**

d) Explain the following commands related to sed.

i. modify commands

ii. substitute commands

iii. hold space commands **[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) What are the permissions for the file myfile that was just created? **[4 Marks]**

i. r – x r – x - - -

ii. r - - r - - - - -

iii. r w x r – x - - -

iv. r w – r - - - - -

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) What information is presented when the following commands are entered?

i. cmp ii. diff iii. comm iv. cut v. paste vi. telnet **[6 Marks]**

QUESTION FIVE [20 MARKS]

All answers are based on the following tree diagram displayed below. You can assume that your Matrix username is called *skywalkr* and you will be currently located in the directory called */home/skywalker* for each of the following questions. Assume all questions are independent of one another. *skywalker* and *obiwan* belong to different groups.

```
/home
|- skywalkr
|          |-- jedi_manual.txt
|          |-- rebel.TXT
|          |-- create_force1.TXT
|          |-- create_force2.c
|          |-- HOMEWORK1
|          |-- HOMEWORK2
|          |-- POD_RACER
|                    |-- op_manual.txt
|                    |-- schedule
|                                |-- june.txt
|                                |-- august.txt
|
|- obiwan
|      |-- create_force1.TXT
|      |-- light_saber.txt
|      |-- pointers.c
|      |-- TRAINING
|                |-- jedi_mind_trick.txt
```

Additional Information:

Directories are: **home**, **skywalkr**, **HOMEWORK1**, **HOMEWORK2**, **POD_RACER**, **schedule**, **obiwan**, and **TRAINING**.

a) Write a single Unix command to add the following directory path starting from the POD_RACER directory. **[2 Marks]**

```
POD_RACER
          |-- MANUALS
          |-- PARTS
                    |-- FUSION
```

b) Write a single Unix command to allow the user *obiwan* to at least read the files in your *schedule* directory. You can assume you have pass-through permissions in your *home* and *POD_RACER* directories. **[2 Marks]**

c) Write a single Unix command to copy all text files (i.e. files that end with an uppercase or lowercase *.txt*) in obiwan's home directory to your home directory. Make certain that you do not accidentally overwrite any of your files. **[2 Marks]**

d) Write a single Unix command to remove all files and directories in your *POD_RACER* directory. Make certain to have the system prompt you prior to removing files or directories. **[2 Marks]**

e) Write a single Unix command to create a file in your home directory called *pointers_obiwan.c* that is a link to the file called *pointers.c* in obiwan's home directory. **[2 marks]**

f) Write a single Unix command to change the file called *june.txt* to *july.txt*. **[1 mark]**

g) Write a Unix pipeline command to display only directory filenames in your current directory. S **[2 marks]**

h) Write a single Unix command to list only directories contained in your home directory that end with two letters (either uppercase or lowercase). **[3 Marks]**

i) Without knowing your current directory move both text files from "schedule" directory to your "home" directory. **[2 Marks]**

j) Without knowing your current directory save a list of all files and directories (trailed with /) of the directory "POD_RACER" at the end of the file "rebel.TXT". **[2 Marks]**