

UNIVERSITY OF RUHUNA
BACHELOR OF SCIENCE GENERAL DEGREE LEVEL III (SEMESTER I)
EXAMINATION – JUNE/JULY 2015

SUBJECT: COMPUTER SCIENCE

TIME: 3 Hours

COURSE UNIT: COM3123/COM312B (System & Network Administration) (Repeat)

Answer six (06) questions including question number one (1)

1. Answer the parts (a), (b) and (c) by considering the following requirements.

The Institute of Information Technology (IIT) offers IT degree courses for Advanced Level qualified students. The institute has two separate buildings, one for the administration and other one for conducting lectures and practical. The institute requires the following enhancements to provide a better service for the students.

- i. Use an efficient communication mechanism to transfer messages between students and lecturers.
- ii. Keep a dual boot computer system in the computer laboratory.
- iii. Protect each computer system in the computer laboratory
- iv. Provide facilities for each student to download/upload his/her practical data and assignments outside the lab environment.

Answer the following questions assuming you are appointed as a System Administrator in the IIT.

- (a) Describe suitable solutions to fulfill each of the enhancements i to iv. [60 Marks]
- (b) Using a single network diagram, suggest a suitable network solution to connect two buildings, assuming the distance between the two buildings is 75 m. [20 Marks]
- (c) Draw a network diagram to connect the administrative building to the Internet and explain how you achieve this task. [20 Marks]

Continue

2. (a) Describe five different system administration software tools provided by Windows Operating System. [30 Marks]

(b) Describe different user profile types provided by Windows Server Operating System. [20 Marks]

(c) Describe the output of the following commands.

i Attrib -R -H %SystemDrive%*.* [10 Marks]

ii Mkdir %UserProfiles%\Mydata [10 Marks]

iii Dir "C:\Program Files" /S [10 Marks]

iv Notepad C:\Users\Cspart3\com3123.txt [10 Marks]

v Compmgmt.msc [10 Marks]

3. (a) Describe three different computer security software tools used in a computer system. [30 Marks]

(b) Answer the following sections with respect to computer security. [30 Marks]

i Describe three types of computer attacks

ii Describe two types of Disaster Recovery technologies

(c) Describe four good habits that you follow when browsing the internet [40 Marks]

4. (a) Giving suitable examples, explain how three Linux Package Management Systems are used in Linux Operating System. [30 Marks]

(b) List three main files used in Linux user management and explain how two of them are used in user management [40 Marks]

(c) Describe the following Linux commands. [30 Marks]

i ssh cspart3@csproject.ruh.ac.lk

ii export http_proxy=http://squid.ruh.ac.lk:3128

iii chmod -R 751 /var/www/html/project2015

Continue

5. (a) Describe the steps required to design and execute a shell script in Linux. [20 Marks]
- (b) Describe three advantages of using shell scripts in Linux. [20 Marks]
- (c) Write a suitable Linux command to create a single tar archive file for */home* and */etc* folders using *tar* Linux command (Assume the name of the archive file is *backup_home_etc_20150710.tar*) [20 Marks]
- (d) Answer the questions (d – i, ii) using the following shell script (*backup.sh*) given in Table-1.

```
#!/bin/bash
Source="/var/log/"
Target="/home/cspart3/Mydata/"
for file in `ls $Source`
do
    if [ "${file}" == "messages" ]
    then
        `scp -r $Source$file $Target`
    fi
done
```

Table-1

- i Describe each line of the shell script (*backup.sh*). [20 Marks]
- ii There are configuration files exist under */etc* folder with the extension “.conf” and you need to copy them to */home/cspart3/Myconf* folder Rewrite the bash script to fulfill the above requirement [20 Marks]
6. (a) Discuss the role of a Power Supply Unit of the computer systems [25 Marks]
- (b) Describe the architecture of Level 5 UPS (Uninterrupted Power Supply) technology by using a suitable diagram. [25 Marks]
- (c) What is N+1 configuration of UPS (Uninterrupted Power Supply)? Draw an N+2 UPS configuration, assuming the maximum power requirement for a laboratory is 20KVA and you have 10KVA UPS modules [25 Marks]
- (d) Explain the relationship between desktop resolution groups and aspect ratio of Personal Computer display unit. [25 Marks]

Continue

7. (a) Describe the general chipset architecture of a Personal Computer using a suitable diagram. [25 Marks]
- (b) Explain the functionality of cache memory and how you improve the efficiency of a Personal Computer using cache memory [25 Marks]
- (c) Explain the use of jumpers in IDE (integrated development environment) disk [25 Marks]
- (d) Briefly explain the role of CMOS memory in a Personal Computer. [25 Marks]