UNIVERSITI TUNKU ABDUL RAHMAN

ACADEMIC YEAR 2015/2016

APRIL EXAMINATION

UEEN3113 SERVER CONFIGURATION AND MANAGEMENT

FRIDAY, 6 MAY 2016 TIME : 2.30 PM – 4.30 PM (2 HOURS)

BACHELOR OF SCIENCE (HONS) SOFTWARE ENGINEERING
BACHELOR OF ENGINEERING (HONS) ELECTRONICS
(COMPUTER NETWORKING)

Instruction to Candidates:

This question paper consists of FIVE **(5)** questions.
Section A has **THREE (3)** questions and **Section B TWO (2)** questions.

Answer **ALL** questions in **Section A** and **ONE (1)** question in **Section B**.

All questions carry equal marks

Should a candidate answer BOTH questions in **Section B**, marks will only be awarded for the **FIRST** question in the order the candidate submits the answers.

Answer the question in the answer booklet provided.

Section A: Answer all questions

Q1. (a) In a *Three-tier* client-server architecture, describe the responsibilities of the following services:

(i) User services (3 marks)

(ii) Application services (3 marks)

(iii) Database Services (3 marks)

(b) Describe the following host in client-server architecture in terms of functionality and advantage (or disadvantage).

(i) Fat Client (4 marks)

(ii) Fat Server (4 marks)

(c) Figure 1.0 shows the IPv4 header. Given an IP datagram with size of 3800 bytes and a header size of 20 bytes that must pass through a network with an MTU limit of 1500 bytes; suggest a method to break this datagram to fit into the new MTU size. Using Figure 1.0, show the values of the new format indicating the header length, the total length and the offset of the new datagram(s). (8 marks)

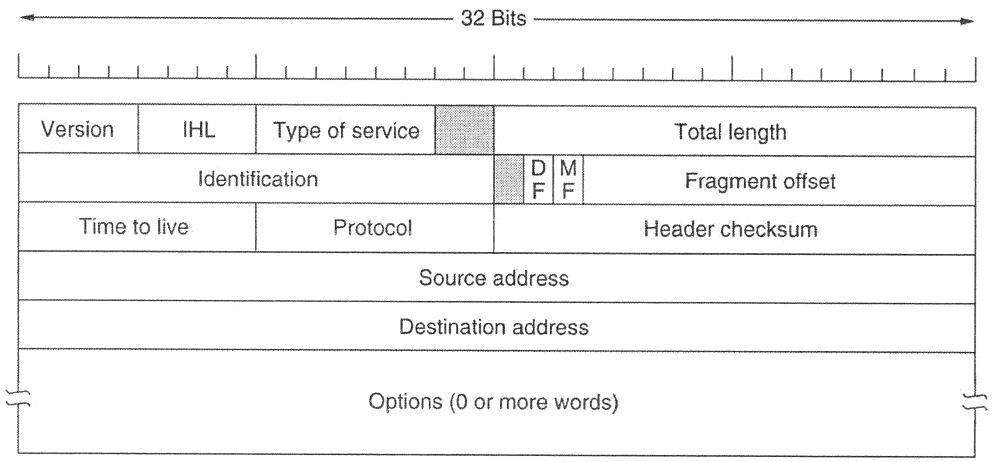

Figure 1.0 IPv4 header

[Total: 25 marks]

Q2. (a) Table 2.0 shows six IPv4 packets (first 8 bytes) captured from the network using a sniffing tool. It is known that the last three IPv4 fragment packets of an important IPv4 packet are among these IPv4 packets. Based on Table 2.0, answer the following questions:

IP Packet 1: 45 00 05 DC 75 86 40 00...	IP Packet 2: 45 00 11 14 75 9a 2a a0...
IP Packet 3: 45 00 11 14 75 9a 2c c0...	IP Packet 4: 45 00 00 20 75 88 00 00...
IP Packet 5: 45 00 00 20 75 99 40 00...	IP Packet 6: 45 00 00 69 75 9a 0e e0...

Table 2.0

(i) Which three IPv4 packets are the fragmented packets? Justify your answer. (3 marks)

(ii) What is the MTU size of this network? (3 marks)

(iii) What is the original size of the IPv4 packet before fragmentation? (5 marks)

(iv) How many IPv4 fragmented packet has been sent for this IPv4 packet? (2 marks)

(b) You are given the responsibility to setup the network configuration of you recently installed Ubuntu server. Answer the following questions using terminal commands.

(i) Configure the eth0 network interface with IP address 192.168.1.10 with a subnet mask of /24 (2 marks)

(ii) Set the default gateway to 192.168.1.254 (2 marks)

(iii) Manually disable and then enable interface eth0 (3 marks)

(iv) Check if the default gateway and IP address is correctly set. (2 marks)

(v) If you want to configure the interface eth0 manually in a file, where is this file located, and what change must be made besides the above configurations? (3 marks)

[Total: 25 marks]

Q3. (a) Describe the **THREE (3)** important principles that should be incorporated in a server backup scheme. (6 marks)

(b) Compare and contrast full backup done on a periodic basis and full backup done incrementally. (6 marks)

(c) The *tar tool* is commonly used as a basic backup tool in a Unix based system using the following format:

sanders@baum:-$ **tar -cvf files | (target directory)**

What is the purpose(usage) of options ***c,v,f*** in the tar tool? Explain. (4 marks)

(d) Briefly explain what the following backup command does.

(i) sanders@baum:-$ **sudo tar cvf var.tar /var** (3 marks)

(ii) sanders@baum:-$ **sudo tar cjvf mybackup.tar.bz2 /** (3 marks)

(iii) sanders@baum:-$ **sudo tar xjvf utartest.tar.bz2** (3 marks)

[Total: 25 marks]

Section B: Answer ONE (1) question

Q4. (a) The following questions are related to the configuration and management of Apache web server running on a UBUNTU operating system.

(i) As an administrator, you want to check the status of you web server. Write the command. (1 marks)

(ii) The apache2.conf file stores the runtime configuration of the Apache server. What is the purpose of the ServerRoot directive? (3 marks)

(iii) If a user wants others to gain access to their html files using the URL http://servername/~username, what configuration commands need to be executed? Assume that the apache2 server was just installed and no configuration was done. (3 marks)

(b) Identify the **FOUR (4)** main challenges to manage a data centre. For each challenge, give a brief description. (8 marks)

Q4. (Continued)

(c) The table below shows the output of the ls –l command run in the var/www/ directory. Answer the following questions:

Line	Output
1	sanders@baum:/var/www$ ls –l
2	total 8
3	drwxr-xr-x 2 sanders root 4096 Jan 28 2015 html
4	drwxrwxr-x 2 sanders sanders 4096 Dec 30 18:16 httpd

(i) What do the alphabetic symbols in column 1 line 3 indicates about the html directory? (4 marks)

(ii) A new file is created in this directory using the following command:

sanders@baum:/var/www$ touch hello.htm

What would be the default privilege given to all the users? Write it in the format given in line 3 column 1.

(2 marks)

(iii) Alter the current privilege setting so that only the owner has write privilege to the file, group has read privileges and others are denied access to the file. Note, use the chmod command using both mnemonic form and binary form.

(4 marks)
[Total: 25 marks]

Q5. (a) Describe **FOUR (4)** benefits of using the COBIT 5 framework. (8 marks)

(b) What are the **FIVE (5)** main objectives of IT governance? (10 marks)

(c) Answer the following questions regarding UNIX-based administrative commands.

(i) How to list all the installed packages in UBUNTU server with the ability to scroll up and down to look at the list? (2 marks)

(ii) If you want to store the above list in a file *package.list*, how should the command in *(i)* be changed? (2 marks)

(iii) If the package is not found in the *package.list* file in *(ii)*, how to install the package into the server? Assume that the package Apache2 is not installed. Show all steps to install the package. (3 marks)

[Total: 25 marks]
