



UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE

COMP 314: COMPUTER NETWORKS

STREAMS: Y3S1

TIME: 2 HOURS

DAY/TIME: FRIDAY 8/12/2017

8.30 A.M – 10.30 A.M

INSTRUCTIONS

- Attempt question ONE (Section A) and any other TWO from SECTION B
- Marks are awarded for clear and concise answers
- ONLY the first THREE Questions attempted will be marked (Question one inclusive)

SECTION A-Compulsory

Question ONE [30 Marks]

(a) Give the function of each of the following network commands [6 Marks]

(i) IPconfig

(ii) getmac

(iii) nslookup

(b) Differentiate between Broadcast and Point-to-Point Networks [4Marks]

(c) Describe **THREE** reasons why a network administrator may decide to group/segment hosts in a network. [6 Marks]

(d) Briefly explain the mechanism that Ethernet applies in detection of MAC frame errors. [4 Marks]

(e) Give **THREE** common point to point protocols [6 Marks]

(f) Differentiate between A.R.P and R.A.R.P protocol. [4 Marks]

Question TWO[20 Marks]

(a) Networks utilize several approaches to control media access. Specify the operation of the following medium access control mechanisms stating the type of L.A.N that each mechanism applies and what happens if there is a collision.

(i) C.S.M.A/CD [6 Marks]

(ii) C.S.M.A/CA [6 Marks]

(b) Create a Supernet from the following networks

(i) 192.200.137.144 and 192.200.132.144 [4 Marks]

(ii) 192.168.144.200 and 192.145.168.200 [4 Marks]

Question THREE [20 Marks]

(a) Consider a computer **X** with the following **IPv4** network configurations:

IP Address	182.154.120.146
Subnet Mask	255.255.255.0
Default Gateway	192.131.250.5
DNS Server	192.60.211.225

(i) What is the address of the network that Computer **X** is attached to [5Marks]

(ii) Suppose computer **X** requests a web access to **http://www.mail.yahoo.com**, which IP address will computer **X** query first in order to determine the IP address of www.mail.yahoo.com [5 Marks]

(iii) Suppose the addresses are based on classes, which class would you classify the network that Computer **X** is attached to [5 Marks]

(iv) Suppose the addresses are based on CIDR, how would you represent the IP address of machine **X** using slash (/) notation. [5Marks]

Question FOUR [20 Marks]

- (a) Give **THREE** features of routers that make them superior to bridges. [6 Marks]
- (b) What are the benefits of aggregating routes in large networks. [4 Marks]
- (c) Discuss **THREE** rules a switch employs in determining the port to forward data frames from and to a L.A.N client. [6 Marks]
- (d) While giving examples, differentiate between a collision domain and broadcast domain. [4 Marks]

Question FIVE [20 Marks]

- (a) Describe the role of the following application layer protocols [10 Marks]
- (i) DNS
 - (ii) Telnet
 - (iii) SMTP
 - (iv) FTP
 - (v) HTTP
- (b) While specifying the role of D.H.C.P server in a L.A.N, explain the D.H.C.P four step process that defines its operation. [10 Marks]
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