UNIVERSITY OF AGRICULTURE, ABEOKUTA
COLLEGE OF NATURAL SCIENCES
DEPARTMENT OF COMPUTER SCIENCE
2009/2010 SECOND SEMESTER UNIVERSITY EXAMINATIONS

**Title:** CSC 426: COMPUTER COMMUNICATION SYSTEMS
**Time allowed:** 2hrs 30 Minutes
**Instruction:** Attempt Four Questions

**Question 1**

(a) Discuss the seven layers of design for communication system as specified by International Organization for Standardization (ISO).
(b) What are the five layers in the Internet protocol stack? What are the principal responsibilities of each of these layers?
(c) Explain the followings:
(i) Message, (ii) Segments (iii) Datagrams, and (iv) Frames

**Question 2**

(a) Distinguish between Circuit Switching and Packet Switching
(b) With suitable diagram, describe the network core
(c) Identify the various sub-networks. With the aid of a table present a summary of sub-network characteristics.

**Question 3**

(a) With suitable diagram, discuss three topology of LAN
(b) State the three main reasons for installing LAN
(c) Carefully, describe steps involved in networking at least 2 computers together.

**Question 4**

(a) What is the difference between a virus, a worm, and a Trojan horse?
(b) Describe how botnet can be created, and how it can be used for a DDoS attack.

(c) Compare the following terms:

(i) Serial & Parallel transmissions

(ii) DTE & DCE

(iii) ACK & NAK

(iv) CRC & ARQ

**Question 5**

(a) Suppose Host A wants to send a large file to Host B. The path from Host A to Host B has three links of rates $R_1$= 500 kbps, $R_2$ = 2Mbps, and $R_3$= 1 Mbps

(i) Assume no other traffic in the network, what is the throughput for the file transfer?

(ii) Suppose the file is 4 Million bytes. Roughly, how long will it take to transfer the file to Host B.?

(iii) Repeat (i) and (ii) , but now with $R_2$ reduced to 100kbps.

(b) Explain what is meant by Delay, Loss, and Throughput in Packets-Switched Networks

**Question 6**

(a) How are end-devices on networks identified uniquely?

(b) ***IPv4*** operates at which layer of the OSI model ?

(c) Explain briefly with examples (i) Network and Host portions

(ii) Network Address (iii) Broadcast Address (iv) Host Address