UNIVERSITY OF GHANA

B.SC INFORMATION TECHNOLOGY, SECOND SEMESTER EXAMINATIONS 2016/ 2017

CSIT 202: INTRODUCTION TO COMPUTER AND NETWORKS   (3 CREDITS)

TIME ALLOWED:

TWO AND A HALF (2½) HOURS

INSTRUCTION:

Answer Question A1 and Any Other TWO (2) Questions in the Answer Booklet.

A1.

a) Explain the role of Back-off algorithm in a CSMA/CD?   **[3 Marks]**

b) Write short notes on the following layers in OSI Reference Model.

I. Application   **[2 Marks]**

II. Data link   **[2 Marks]**

III. Physical   **[2 Marks]**

a) Explain the role of the transport layer in TCP/IP Protocol Suite   **[3 Marks]**

b) Differentiate between the two transport layer protocols stating the key benefit of one over the other   **[4 Marks]**

c) As the network administrator you are given the network address 172.50.0.0/16 to subnet and provide IP addressing for the network. In JuBeeInc University College, the Computer Science department will need 6000 hosts, Engineering will need 3200 hosts, Statistics will need 200 hosts, Mathematics will need 100 hosts, Physics will need 50 hosts, the VC office will need 2 hosts and the Provost's office will also need 2 hosts. Provide the subnet mask for each department stating the network address and the broadcast address?   **[14 Marks]**

A1.

a) Explain the following terms with reference to layer 2 switching?

I. Flooding a Frame   **[2 Marks]**

II. Forwarding a Frame   **[2 Marks]**

III. Filtering a Frame   **[2 Marks]**

a) How does data encapsulation work in relation to OSI network reference model?

[6 Marks]

b) Differentiate between Routed Protocols and Routing Protocols stating two examples each of these protocols?   **[8 Marks]**

A1.

a) Differentiate between Routing and Switching?   **[6 Marks]**

b) Explain the concept of Collision?   **[3 Marks]**

c) What is Flow Control?   **[3 Marks]**

d) Differentiate between Collision domains and Broadcast Domains?   **[4 Marks]**

e) What is the key difference between a Distance-vector routing protocol and a Linked-state routing protocol?   **[4 Marks]**

A1.

a) Explain the following?

I. Router   **[2 Marks]**

II. Repeater   **[2 Marks]**

III. Switch   **[2 Marks]**

a) A PING in networking stands for Packet Inter-Network Groper. How does the PING command works and what are the three basic test that can be performed?

[6 Marks]

a) The power delivered to an original laser is 5 microwatts (5×10^{-6} Watts), and the total gain of a fibre link is 10dB. How much source power is needed?

[5 Marks]

a) What is Inter-frame Spacing?   **[3 Marks]**