



COLLEGE OF BUSINESS, PEACE, LEADERSHIP AND GOVERNANCE

CIS 303 NETWORKS AND COMMUNICATIONS

END OF FIRST SEMESTER EXAMINATIONS

NOVEMBER/DECEMBER 2018

LECTURER: MR A.C MUZENDA

DURATION: 3 HOURS

INSTRUCTIONS

Answer all Questions in Section A and any three questions from Section B
Total possible mark is 100

Start **each** question on a new page in your answer Booklet.

The marks allocated to **each** question are shown at the end of the section.

SECTION A

QUESTION 1

- a. Error detection and correction is an important issue when we are moving information across network links. Briefly describe the technique known as single bit parity checking. Include in your answer an explanation of what is meant by even parity and odd parity. [5]
- b. Show, by means of a diagram, how a subnet mask can be used to extract the network identification and host identification from an IP address. [6]
- c. State at which layer of the OSI model the following devices operate on:
 - i) Router
 - ii) Hub
 - iii) Switch[2*3]
- d. Outline the basic operation of the open shortest path (OSPF) routing protocol. [8]
- e. Compare and Contrast the OSI Reference model and the TCP/IP Protocol Suite. Also make use of diagrams. [10]
- f. Describe the Token Ring architecture [5]

SECTION B

QUESTION 2

- a. Show, by means of a diagram, the frame format used within the IEEE 802.3 CSMA/CD LAN. [4]
- b. A salesman has been given a company laptop computer. They are currently attending a conference in another country but need to access their company's network and servers. Explain how; if they have access to the Internet, they could use a VPN to gain secure access to their company's network. You may assume that the company network is also connected to the Internet via a Firewall. [6]

- c. Outline the differences between Conducted media and Radiated media. Explain two examples of each. [6]
- d. With reference to the OSI reference model and with the aid of diagrams, briefly explain
(i) How communication takes place and data exchanged between layers on the same computer. [4]

QUESTION 3

- a. In detail describe how block parity error check works in error detection. [8]
- b. Explain 3 functions of PAD in transmission of data packet switching network. [6]
- c. What is a router and describe its importance? [3]
- d. Explain 5-4-3 rule. [3]

QUESTION 4

- a. The IEEE 802.2 standards split the Data Link Layer into two sublayers. Identify and explain the two layers. [8]
- b. Outline five differences between TCP and UDP. [5]
- c. Give the benefits of using Fibre Optic for network cabling. [3]
- d. What is Subnetting? Why is it used? [4]

QUESTION 5

- a. The primary function of the Transport Layer is to ensure that a communication link exists before the actual communication process takes place. Outline the three (3) basic aspects involved in executing this function. [10]
- b. Distinguish carefully between circuit switching and packet switching, giving suitable examples. Give ONE advantage and ONE disadvantage for each. [8]
- c. Explain propagation delay. [2]

THE END