



ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF HEALTH, SCIENCE AND TECHNOLOGY

DEPARTMENT OF DIGITAL TECHNOLOGY

EXAMINATION PAPER

COURSE CODE : CDT206
COURSE TITLE : Data Communications and Networks
DURATION : 3 Hours
LEVEL : 2.2
DATE : 2021

INSTRUCTIONS TO CANDIDATES:

1. There are five questions in this paper
2. Each question carries 25 marks
3. Answer ANY 4 full questions.

Question One

- a. Ethernet supports a protocol known as Carrier Sense Multiple Access with Collision Detection (CSMA/DA). Explain how it works, giving an example of how it ensures a low probability of collision when two nodes attempt to transmit at the same time. (10)
- b. What Is the purpose of the “Jam sequence”? (2)
- c. Explain what you understand by the term polling? (3)
- d. Ethernet is now the most common networking technology for the construction of Local Area Networks (LANs) and supports a range of physical media. Explain the differences between 10BT and 10B2 cabling. (10)

Question 2

- a. With the aid of examples, outline the major types of delays associated with communication networks. (10)
- b. Giving examples of error correction codes, describe the processes involved in error detection, control and correction in data communications. (15)

Question 3

- a. Define the word cryptography. (2)
- b. Write short notes on
- i. Secret key encryption (4)
 - ii. Public key encryption (4)
 - iii. Message digest (4)
- c. Name three transmission modes and explain how they work. (11)

Question 4

- a. Define the following terms
 - i. Asynchronous transmission
 - ii. Synchronous transmission
 - iii. Firewall
 - iv. Modulation
 - v. Multiplexer
 - vi. MODEM (12)
- b. Explain the role of the router in the context of other networking devices (6)
- c. With the aid of a diagram explain ring topology (7)

Question 5

- a. There are three typical switching techniques available for digital traffic. Identify the three switching techniques and explain how they work? (9)
- b. Transmission media can be categorised into the means by which the data will travel, guided and unguided. State two guided and two unguided transmission medias and explain how they work. (16)