

PAN AFRICA CHRISTIAN UNIVERSITY

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

END OF SEMESTER EXAMINATION

DEPARTMENT: COMPUTING AND INFORMATION TECHNOLOGY
COURSE CODE: BIT205
COURSE TITLE: DATA COMMUNICATIONS
CAMPUS: ROYSAMBU
EXAM DATE: DECEMBER, 2022
TIME: 5pm-8:30pm (Thursday)

INSTRUCTIONS

- This exam script has **TWO (2)** sections.
- Read all questions carefully before attempting.
- Answer All questions in Section **A** and any other Three questions in Section **B**.
- Write only your **student number** on the answer booklet provided.

SECTION A

(Answer ALL questions in this section)

Question 1:

- a) Describe the term bandwidth **[2 Marks]**
- b) Devices communicate with each other by sending and receiving data. Describe Simplex and Half duplex data flow in data communication with examples. **[4 Marks]**
- c) Discuss two ways in which of infrared waves are applied in real life. **[4 Marks]**

SECTION B

(Answer any THREE (3) questions in this section)

Question 2:

- a) Discuss three switching techniques used for transmitting data across networks. **[6 Marks]**
- b) For communication to occur, two devices must be connected in some way to the same link at the same time. Explain the following methods of connection. **[4 Marks]**
- i. Point-to-Point connection
 - ii. Multipoint connection

Question 3:

- a) Discuss four fundamental characteristics of data communication that determine its effectiveness and efficiency. **[8 Marks]**
- b) Explain the role of transmission medium as a component of data communication. **[2 Marks]**

Question 4:

- a) Network Topology is the representation of a network arrangement, connecting various nodes (sender and receiver) through lines of connection. Discuss any three types of topology. **[6 Marks]**
- b) Differentiate between Local Area Network and Wide Area Network. **[4 Marks]**

Question 5:

- a) A simple analog signal is a sine wave - a geometric waveform that oscillates (moves up, down, or side-to-side) periodically that cannot be further decomposed into simpler signals. Discuss three characteristics of an analog Signals. **[6 Marks]**
- b) Differentiate between Baseband and Broadband Transmission in view of data communication. **[4 Marks]**

Question 6:

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a) Discuss difference between Radio Wave and Microwave as a type of wireless transmission medium. **[4 Marks]**

b) Explain three benefits of using Fiber Optic cables over Twisted Pair Cables. **[6 Marks]**