



(Knowledge for Development)

**KIBABII UNIVERSITY
(KIBU)**

**UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR**

**END OF SEMESTER EXAMINATION
YEAR ONE SEMESTER TWO EXAMINATION**

**FOR THE DEGREE
(INFORMATION TECHNOLOGY)**

COURSE CODE : BIT 125

**COURSE TITLE : INTRODUCTION TO DATA
COMMUNICATION**

DATE: 15/07/2021

TIME: 2.00PM-4.00PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE (30 MARKS) [COMPULSORY]

- a. Define the following terms [3 Marks]
- i. Computer network
 - ii. Amplitude
 - iii. Modulation
- b. What does the frequency of a signal measure? [1 Mark]
- c. Explain why protocols are needed in data communication. [2 Marks]
- d. Distinguish between baseband transmission and broadband transmission. [4 Marks]
- e. Contrast between periodic signal and aperiodic signal [4 Marks]
- f. Outline the different forms through which information can be conveyed. [4 Marks]
- g. With the aid of a well labelled diagram, contrast between digital signal and analog signal. [6 Marks]
- h. Describe the THREE essential attributes that should be met by a computer network for it to effectively share data among different computers in the world. [6 Marks]

QUESTION TWO (20 MARKS)

- a. i. Differentiate between random access and controlled access. [2 Marks]
- ii. Outline any two protocols in controlled access protocols. [2 Marks]
- b. Describe how intranet differs from extranet. [4 Marks]
- c. Explain how guided media differs from unguided media. [4 Marks]
- d. You are in the process of networking a newly formed branch of your company. Explain any four reason why you will prefer optical fiber over twisted-pair and coaxial cable. [8 Marks]

QUESTION THREE (20 MARKS)

- a. The period of a signal is 100 ms. Determine its frequency in Kilohertz. [3 Marks]
- b. Briefly describe FOUR different types of noise which lead to transmission impairment. [8 Marks]

- c. With the aid of a diagram, describe any THREE data transmission modes and state an example in each case. **[9 Marks]**

QUESTION FOUR (20 MARKS)

- a. Distinguish between forward error correction versus error correction by retransmission. **[2 Marks]**
- b. i. Compare and contrast byte-oriented and bit-oriented protocols. **[4 Marks]**
ii. Explain which category of the above protocols has been popular in the past and which one is now popular. Justify your answer. **[4 Marks]**
- c. Explain the difference between network layer delivery and transport layer delivery. **[2 Marks]**
- d. Describe the services provided by the application layer in the Internet model. **[8 Marks]**

QUESTION FIVE (20 MARKS)

- a. Describe three techniques of digital-to-digital conversion. **[6 Marks]**
- b. Describe three main multiplexing techniques. **[6 Marks]**
- c. Describe four protocols in multiple access category **[8 Marks]**