



(KNOWLEDGE FOR DEVELOPMENT)

**KIBABII UNIVERSITY
(KIBU)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
END OF SEMESTER EXAMINATION**

2021/2022 ACADEMIC YEAR

**FIRST YEAR SECOND SEMESTER EXAMINATION
FOR THE DEGREE OF BACHELORS OF SCIENCE IN
(INFORMATION TECHNOLOGY)**

COURSE CODE: BIT 125

COURSE TITLE: DATA COMMUNICATION

DATE: 13/05/2022

TIME: 2.00 P.M. – 4.00 P.M.

2HRS

INSTRUCTIONS TO CANDIDATES:

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

Paper Consists of 3 Printed Pages Please Turn Over ➡

QUESTION ONE (30 MARKS) [COMPULSORY]

- a. Define the following terms [2 Marks]
- i. Data (with respect to data communication)
 - ii. Telecommunication
- b. State the name of the protocol responsible for security at the presentation layer [1 Mark]
- c. The transport layer can be either connectionless or connection oriented. Distinguish between these two modes of transmission [4 Marks]
- d. Contrast between periodic signal and aperiodic signal [4 Marks]
- e. Outline two different OSI model layers responsible for error control. [2 Marks]
- f. Define a DC component and describe its effect on digital transmission. [3 Marks]
- g. The power used at a home has a frequency of 60 Hz. Determine the period of this sine wave. [3 Marks]
- h. Determine the bandwidth of a periodic signal is decomposed into five sine waves with frequencies of 200, 300, 500, 700, and 800 Hz. [3 Marks]
- i. Explain the relationship between period and frequency. [4 Marks]
- j. With the aid of examples, explain how a web browser differs from a search engine. [4 Marks]

QUESTION TWO (20 MARKS)

- a. Explain the difference between half-duplex and full-duplex transmission modes and state an advantage of each. [4 Marks]
- b. Briefly describe four major categories of unguided media technologies. [8 Marks]
- c. Discuss any two protocols for noiseless channels and any two protocols for noisy channels [8 Marks]

QUESTION THREE (20 MARKS)

- a. Contrast between telephone network and the internet. [4 Marks]
- b. Describe THREE fundamental characteristics which determine the effectiveness of a data communication system. [6 Marks]
- c. With the aid of a diagram, describe the components of a data communication system. [10 Marks]

QUESTION FOUR (20 MARKS)

- a. Describe any THREE types of network transmission impairment. **[6 Marks]**
- b. Briefly describe three major classes of guided media **[6 Marks]**
- c. List four major components of a packet switch and describe their functions. **[8 Marks]**

QUESTION FIVE (20 MARKS)

- a. Define the term line code hence explain its function. **[2 Marks]**
- b. Describe Five different line coding schemes **[10 Marks]**
- c. The network layer provides two reliable services – switching and routing. Contrast between the two. **[4 Marks]**
- d. Explain two advantages of combining the session, presentation, and application layer in the OSI model into one single application layer in the Internet model. **[4 Marks]**