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(Knowledge for Development)

**KIBABII UNIVERSITY
(KIBU)**

**UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR**

**END OF SEMESTER EXAMINATIONS
YEAR TWO SEMESTER ONE EXAMINATIONS**

**FOR THE DIPLOMA IN
(INFORMATION TECHNOLOGY)**

COURSE CODE : DIT 069
**COURSE TITLE : COMPUTER NETWORKS AND
DATA COMMUNICATION II**

DATE: 17/06/2021 TIME: 9.00 A.M- 11.00 A.M.

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE AND ANY OTHER TWO

QUESTION ONE [COMPULSORY] (24 MARKS)

- (a) A variety of devices are used in networking and internetworking. Give any **two (2)** clear differences in each pair of the following:
- i. Bridge and Router [2 Marks]
 - ii. Hub and Switch [2 Marks]
 - iii. Repeater and amplifier [2 Marks]
- (b) Give **FOUR** benefits of using Fiber Optics over Wireless media [4 Marks]
- (c) You are experiencing intermittent issues relating to congestion with your network. What are the possible causes of congestion on a LAN? [4 Marks]
- (d) Describe the three criteria necessary for an effective and efficient network [6 Marks]
- (e) What are some of the factors one should consider when selecting a network topology for an organization? [4 Marks]

QUESTION TWO (18 MARKS)

- (a) Explain the following terms [6 Marks]
- i. Signal
 - ii. Digital signal
 - iii. Analog signal
 - iv. Period
 - v. Amplitude
 - vi. Frequency
- (b) Explain any **four (4)** ways that network managers can enhance availability and reliability of their networks. [4 Marks]
- (c) Compare and contrast a circuit-switched network and a packet-switched network. [4 Marks]
- (d) List **TWO** advantages and two disadvantages of having international standards for network protocols. [4 Marks]

QUESTION THREE (18 MARKS)

- (a) What is the principal difference between connectionless communication and connection-oriented communication? [4 Marks]
- (b) Kibabii University has installed wireless Internet in the student's hostels. Explain any three benefits that the students will realize from this installation. [4 Marks]
- (c) Datalink layer is responsible for framing, physical addressing, flow control, error control, and access control. Discuss. [6 Marks]
- (d) What are some of the network and data communication threats [4 Marks]
- (e) Differentiate between parallel and serial transmission. [4 Marks]

QUESTION FOUR (18 MARKS)

- (a) Describe three main multiplexing techniques. [6 Marks]
- (b) Most modern telecommunication companies are adopting digital communication/transmission for a number of reasons. Briefly discuss any **three (3)** of them. [6 Marks]
- (c) Find out what networks are used at your campus or place of work. Describe the network types and topologies used. [6 Marks]

QUESTION FIVE (18 MARKS)

- (a) With the use of a diagram, briefly explain Wave-length Division Multiplexing [6 Marks]
- (b) Briefly describe how a Modem Works [6 Marks]
- (c) Explain functions in the following layers of the OSI reference model: [6 Marks]
- i) Data link layer.
 - ii) Transport layer.
 - iii) Application layer.