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*(Knowledge for Development)*

**KIBABII UNIVERSITY**

**(KIBU)**

**UNIVERSITY EXAMINATIONS  
2021/2022 ACADEMIC YEAR**

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

**FOR THE DEGREE  
INFORMATION TECHNOLOGY**

**COURSE CODE : BIT 214**  
**COURSE TITLE : COMPUTER NETWORKING**

**DATE: 04/01/2022**

**TIME: 8.00 A.M. – 10.00 A.M.**

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**INSTRUCTIONS TO CANDIDATES**

**ANSWER QUESTIONS ONE AND ANY OTHER TWO.**

### QUESTION ONE [COMPULSORY] (30 MARKS)

- a. Kibabii University has installed wireless Internet in the student's hostels. Explain any three benefits that the students will realize from this installation. [3 marks]
- b. Define network topology [2 marks]
- c. State a similarity between different network topologies [2 marks]
- d. Bostley intends to use unguided transmission medium for his company's network. Explain two limitations of this medium. [2 marks]
- e. List four different categories which can be used to discriminate computer networks into different groups based on a variety of factors. [4 marks]
- f. Contrast between passive computers and active computers and list the network topology which hosts each of them. [3 marks]
- g. Define signal bounce; explain its negative impact and how it is dealt with. [3 marks]
- h. Describe the term error detection. [3 marks]
- i. Internet Control Message Protocol is a crucial network layer protocol. Clearly describe how it functions. [3 marks]
- j. Data link layer is the second layer of the OSI model. Clearly describe its duty. [3 marks]
- k. Describe a Domain Name Service. [2 marks]

### QUESTION TWO (20 MARKS)

Computer networks can be characterized into various groups based on different features that they possess. Discuss the various types of network including an illustration where applicable. [20 marks]

### QUESTION THREE (20 MARKS)

- a. There are three types of errors which can occur during signal transmission. With the aid of a diagram, explain each one of them **[3 marks]**
- b. Justify why a single bit error rarely occurs in serial data transmission. **[2 marks]**
- c. During data transmission, errors are bound to occur. Different mechanisms have been put in place to investigate whether the message received is actually what was sent. A byte of data 11001001 is transmitted using the CRC polynomial  $x^3 + 1$  to protect it from errors. Explain in details the process undergone to the last step at the receiver end to know whether the data had an error or was error free. **[8 marks]**
- d. The OSI reference model has seven different layers. List down four different layers and match them with the name of datagrams in those layers. **[4 marks]**
- e. State three common features between PX and Centrex switch systems. **[3 marks]**

### QUESTION FOUR (20 Marks)

- a. Network management is the process of administering and managing computer networks. Explain the different aspects of network management. **[10 marks]**
- b. Define the term search engine hence explain in details how the search engine enables users search for documents from the web. **[6 marks]**
- c. User freedom while accessing the internet is hampered by unethical activities which has led to internet security experts to work round the clock to curb the security concerns. Explain four internet security risks. **[4 marks]**

### QUESTION FIVE (20 Marks)

- a. MAC address is a significant component in networking. Describe it hence explain its importance. **[3 marks]**

b. Describe digital subscriber line.

**[2 marks]**

c. Digital subscriber line comes in different types to enable users choose the one that suits their needs and is cost-effective. Clearly explain the five different types of DSL to bring out their uniqueness.

**[15 marks]**