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**UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY EXAMINATIONS
YEAR TWO SEMESTER TWO EXAMINATIONS**

**FOR THE DEGREE OF
BACHELOR OF SCIENCE EDUCATION SCIENCE**

COURSE CODE : CSC 223

COURSE TITLE : DATA COMMUNICATION

DATE: 10/08/2023

TIME: 2:00 P.M – 4:00 P.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE [COMPULSORY] [30 MARKS]

- 1 a) Define the following terms as used in Data Communication: [1 mark each]
- i. Computer Network
 - ii. Client
 - iii. Transmitter
 - iv. Signal
 - v. Channel
- b) Give reasons why more than one computer needs would need to be connected to other computers? [3 marks]
- c) What is the major role of a transmission media? [1 mark]
- d) State the advantages of using the Fiber Optic transmission medium over the Coaxial cables. [3 Marks]
- e) Explain the following types of routing
- i. Static routing [2 Marks]
 - ii. Dynamic routing [2 Marks]
- f) Devices communicate with each other by sending and receiving data. Using diagrams show different ways that data flows in communication. [6 marks]
- g) Differentiate between baseband and broadband transmission. [4 marks]
- h) What is modulation? What are its two types? [2 marks]
- i) Discuss the traditional methods of switching as used in data communication [9 marks]

QUESTION TWO [20 MARKS]

- a) Terminals are designed primarily to input and display information in some form or the other. Discuss three types of terminals. [6 marks]
- b) Briefly enumerate four tasks performed by the NIC (Network Interface Card) [4 marks]

c) Cable television is becoming more popular these days than the past. Using the FDM concept, explain how a viewer seated in his room is able to choose between different television channels.

[4 marks]

d) During communication, there is a possibility that the signal received will be different from the one sent originally as a result of different impairments. Give briefly the most common impairments to communication.

[4 marks]

e) What is multiplexing? Why is it carried out?

[2 marks]

QUESTION THREE [20 MARKS]

a) You have been invited to a secondary school computing congress. You have been requested to give a presentation on network topologies and how they work. Using diagrams give a preparation of the presentation that you are going to give.

[12 marks]

b) Give a detailed explanation of the components of data communication

[5 marks]

c) Using a diagram, show how a fiber optic cable transmits a signal

[3 marks]

QUESTION FOUR [20 MARKS]

a) Your ICT Company has been contracted to construct a Local area network for Kibabii University. Discuss four networking and two internetworking devices you will use to construct the network.

[12 marks]

b) Compare and contrast the TCP/IP model and the OSI model. (Use a diagram)

[8 marks]

QUESTION FIVE [20 MARKS]

a) Write a brief description of what the OSI model is.

[2 marks]

b) Give four advantages of layered network architecture.

[4 marks]

c) In details give the functions of each of the seven layers in the OSI reference model

[14 marks]