(University of Choice)

MASINDEMULIROUNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

FIRST YEAR FIRST SEMESTER

2022/2023 ACADEMIC YEAR

EXAMINATIONS

FOR THE DEGREE OF BACHELOR

OF

INFORMATION TECHNOLOGY

COURSE CODE: **BIK 124**

COURSE TITLE: FUNDAMENTALS OF COMPUTER NETWORKS

DATE: 12/04/2023   **TIME:** 12:00-2:00PM

INSTRUCTIONS TO CANDIDATES

Question ONE (1) is compulsory
Attempt anyTWO (2) questions

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

Question One

a) Explain 3 uses of a Computer Network   3 marks

b) Explain the terms i) a node,   2 marks

                ii) topology   2marks

(c) The transmission of a stream of bits can be done in two ways: synchronously or asynchronously. Indicate how each work and which one is more suitable for the transmission of large blocks of bits. 4 marks

(d) Transmission media is also referred to as communication channel. With aid of diagrams, describe the following wired media:

     i. UTP and STP cable   4 marks

     ii. Coaxial cable   2marks

(e) Explain how error detection is achieved in digital data communications and describe one of the error-detection techniques used.   5 marks

f) Differentiate between hub, switch, bridge and router   8 marks

Question Two

(a) With aid of diagrams, describe the three types of wireless propagation   9 marks

(b) Explain why a Repeater is necessary in a network   4 marks

c) When two different networks using different architectures have to be interconnected, network protocol conversion becomes a necessary process that must be performed.

i. Explain why protocol conversion is necessary   3 marks

ii. State the 4 layers of TCP/ IP protocol   4 marks

Question Three

a) Fibre Optic Cables have characteristics that distinguish them from other cables. Explain the 3 characteristics that make fibre optic cable unique   6 marks

b)i) Differentiate the PAN, LAN, MAN, WAN networks   4 marks

c) Explain the following terms: i. IP address class   2 marks

                   ii. Private IP address   2 marks

                   iii. Network address translation   2 marks

d) Explain the following network trouble shooting tools i) Ping   2 marks

                   ii) Tracert   2 marks

Question Four

a) Discuss 3 network topologies and briefly state advantages and disadvantages   9 marks

b) Differentiate between a Hub and a switch.   4 marks

c) List 4 consideration in choosing a network media   7 marks

Question Five

a) When two different networks using different architectures have to be interconnected, network protocol conversion becomes a necessary process that must be performed.

i. Identify any two network architectures/technologies   2 marks

b) Identify the layer of TCP/IP model where the following takes place:

   i. Encryption   3 marks

   ii. Dialog negotiation   3 marks

   iii. Flow control   3 marks

   iv. Media access method   3 marks

   v. Error detection and correction   3 marks

   vi. Routing   3 marks