



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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## University Examinations 2022/2023

FIRST YEAR, SECOND TERM, EXAMINATION FOR DIPLOMA IN INFORMATION  
COMMUNICATION AND TECHNOLOGY

MAIN EXAMINATION

**IT/OS/ICT/CR/01/6: PERFORM COMPUTER NETWORKING**

**DATE: APRIL 2024**  
**HOURS**

**TIME: 2**

**INSTRUCTIONS:** *Answer Question One and any other Two questions*

### **QUESTION ONE (40 MARKS)**

1. Define the following terms as used in networks (4 marks)
  - (i) Topology
  - (ii) Adapter card
  - (iii) NOS
  - (iv) Modem
2. Networks are differentiated with respect to their capability and coverage. State and explain any network types (3 marks)
3. Describe the difference between the UTP cable and STP cable (2 marks)
4.
  - i. Define a protocol (1 mark)
  - ii. List and explain protocols used in computer networks (3 marks)
5. Define a network operating system and explain its major functions (5 marks)
6. Describe the differences between the following terms as used in the networks. (4mks)
  - i. A network and networking.
  - ii. Switches and Hubs.

- iii. Peer to peer network and client-based network.
  - iv. Multitasking and multiprocessing
7. Using well illustrated diagrams explain two types of network topologies. (4mks)
  8. Describe the following network equipment's, clearly stating which layer in the ISO-OSI reference model do they operate in. (4mks)
    - i. Routers.
    - ii. Switches.
  9. There are several advantages of networks as studied earlier, in networking, and also disadvantages go hand in hand. List **three** advantages and **one** disadvantage of networking. (4mks)
  10. Describe in detail THREE of the factors we look for when choosing a network operating system. (3mks)
  11. Networking environment is best implemented using a network operating system. Describe a Network Operating System (3mks)

### **QUESTION TWO (20 MARKS)**

- a) Explain the major subcategories of topologies (6 marks)
- b) With an aid of a well labelled diagram explain the hierarchical star topology (5 marks)
- c) Sedik is a private investor; he wishes to have a physical layout of his new SME (Small Business Enterprise). Explain factors to consider before giving him your recommended layout (6 marks)
- d) Explain major causes of data corruption during data transfer (3 marks)

### **QUESTION THREE (20 MARKS)**

- a) Describe the OSI model and state its governing body (2 marks)
- b) Define a server and explain any four types of servers (5 marks)
- c) Give a brief description of the following OSI model layers (8 marks)
  - (i) Network layer
  - (ii) Presentation layer
  - (iii) Transport layer
  - (iv) Data link layer
- d) List the advantages of NOS a case scenario of Meru university town campus branch. (5mks)

#### **QUESTION FOUR (15 MARKS)**

a) Explain the functions of the following network devices (8 marks)

(i) Router

(ii) Bridge

(iii) Switch

(iv) Repeater

b) Amos wants to set a cyber cafe at the town centre that consists of 25 computers; he approaches you on the best way to interconnect the nodes together. Answer the following question:

(i) In interconnection of the devices to a LAN he may use a passive or active hub, differentiate between the two (3 marks)

(ii) List and describe the use of the devices that Amos is required to procure for this job. (4mks )

e) Describe the following giving examples of each. (5mks)

i. Unguided media.

ii. Guided Media.

#### **QUESTION FIVE [20 MARKS]**

a) What can prove that a network has a good security system? (5mks)

b) List FIVE tools that are applied in the troubleshooting process. (5mks)

a) Discuss FIVE information security services. (5mks)

b) Explain the process of troubleshooting a network problem. (5mks)