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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2023/2024 ACADEMIC YEAR
FIRST YEAR, SECOND SEMESTER EXAMINATION
FOR THE DIPLOMA IN BUSINESS INFORMATION TECHNOLOGY
DIT 1010 – DATA COMMUNICATIONS & NETWORKS

Date: 15TH December, 2023
Time: 11:30AM- 1:30PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a) Define the following terms used in networking and data transmission (6 Marks)
- i) Baseband signal
 - ii) Frequency
 - iii) Bandwidth
- b) Describe **three** major data communication models. State an example in each model. (6 Marks)
- c) Discuss four factors to be considered while selecting a data transmission system (8 Marks)
- d) Network topology is the arrangement of computers, cables, and other devices in a network. Using appropriate diagrams, describe any four types of physical network topologies (8 Marks)
- e) Explain the concept of a geostationary satellite (2 Marks)

QUESTION TWO (20 MARKS)

1. Discuss four network systems that are not computer-based networks (8 Marks)
2. Operating systems are designed to enable networked computers to respond to service requests. Discuss four functions of a network operating system (8 Marks)
3. There are four major types of bounded transmission media, highlight them. (4 Marks)

QUESTION THREE (20 MARKS)

- a) Discuss three limitations of networking (6 Marks)
- b) Discuss four advantages of fiber optic cable over the other transmission cables (8 Marks)
- c) Computer networks are usually classified according to size. Discuss three most common types of computer networks in use today (6 Marks)

QUESTION FOUR (20 MARKS)

- a) Discuss four advantages of coaxial cable over twisted pair cable. (8 Marks)
- b) How does each of the following networking models operate? (6 Marks)
- i) Centralized computing
 - ii) Collaborative computing
 - iii) Distributed computing
- c) For a network to be fully operational, communication devices acting as interfaces are required, highlight at least six devices used in data communication (6 Marks)

QUESTION FIVE (20 MARKS)

- a) By the use of a well-labeled diagram, what are the layers in OSI Reference Models? Describe each layer briefly. (10 Marks)
- b) Radio waves are used in radio and television broadcasts. Discuss the concepts of the following radio waves (6 Marks)
 - i) High Frequency (HF) waves
 - ii) Very High Frequency (VHF) waves
 - iii) Ultra-High Frequency (UHF) waves
- c) A satellite is a microwave relay station. Discuss two advantages of satellite communication (4 Marks)