



UNIVERSITY EXAMINATIONS

FOURTH YEAR EXAMINATION FOR THE AWARD OF THE

DEGREE OF BACHELOR OF INFORMATION SCIENCE

SECOND SEMESTER, 2023/2024

(AUGUST-DECEMBER, 2023)

INS 456: DATA COMMUNICATION & NETWORKS

STREAM: Y4 S2

TIME: 2 HOURS

DAY: MONDAY, 12.00–2:00 PM

DATE: 27/11/2023

INSTRUCTIONS

- 1) Do not write anything on this question paper.**
- 2) Answer Question ONE [Compulsory] and any other TWO Questions**

QUESTION 1 [30 MARKS]

- a) Outline advantages and disadvantages of Hybrid network topology 6 marks)
- b) Distinguish between a hub and a switch as used in networks (4 marks)
- c) outline the factors to consider when selecting a network transmission media over cost (4 Marks)
- d) Network administrators use several documents when troubleshooting a network. Describe two documents commonly used. (4 Marks)
- e) Network design is a very important phase in networking. Explain three objectives to be attained by the phase. (6 Marks)
- f) Explain each of the following terms as used in networking and data communication:
 - a. Cookies (2 marks)
 - b. Bookmarks (2 Marks)
 - c. Hotspot (2 Marks)

QUESTION 2 (20 MARKS)

- a. State four components of Data communication system (4 Marks)
- b. Outline four reasons for encoding signals during data transmission (4 Marks)
- c. Outline two data transmission impairments (2 marks)
- d. What are the layers in OSI Reference Models? Describe each layer briefly. (10 marks)

QUESTION 3 (20 MARKS)

- a) John was required to install a communication software for his company. Outline factors he should consider before installing the software. (6 marks)
- b) Use of Passwords promote network security. Outline four precautions that should be considered when assigning passwords. (6 Marks)
- c) The figure below is a URL for Kisii University. Study it well and explain the function of each of the parts labelled (i), (ii), (iii) and (iv). (8 Marks)

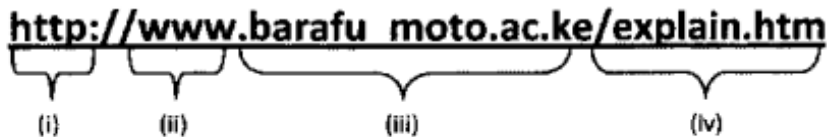


Figure 1

(10 Marks)

QUESTION 4 (20 MARKS)

- a) Assume that you are the Administrator of your organization and you are asked by the management to define the security measures undertaken to secure your data, how would you go about solving the problem? (10 Marks)
- b) Explain the difference between: (10 marks)
 - a. Multiplexer and demultiplexer
 - b. Circuit Switching and Packet Switching

QUESTION 5 (20 MARKS)

- a) Differentiate between analog and digital signals as used in data communication. (4 Marks)
- b) outline challenges of peer to peer network model (6 marks)
- c) Explain five factors to consider when selecting the type of physical media to deploy in a LAN (10 Marks)