KISII UNIVERSITY
UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF BACHELOR OF COMPUTER SCIENCE/SOFTWARE ENGINEERING/INFORMATION SCIENCE
FIRST SEMESTER, 2023/2024
(AUGUST-DECEMBER, 2023)

COMP 220/ SOEN 220 / INS 220: DATA COMMUNICATION AND NETWORKS

STREAM: Y2 S1   **TIME: 2 HOURS**

DAY: THURSDAY, 03:00–05:00 PM   **DATE: 23/11/2023**

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

QUESTION ONE (30 MARKS)

a, Define data communication.   (2 marks)
b. Explain any two modes of data communication.   (4 marks)
c. Discuss four benefits of computer networks.   (4 marks)
d, Differentiate between analog data signal and digital data signal. (4marks)
e. Explain the following data communication terms.
    i. Bit   (2 marks)
    ii. Baud rate   (2 marks)
    iii. Modulation   (2 marks)
f. Multiplexing is the sharing of a medium or bandwidth. Discuss any three types of multi plexing.   6 marks
g. Explain three benefits of fibre optic cable.   (3 marks)
h. Distinguish between a star topology and a ring topology.   (2 marks)

QUESTION TWO (20 MARKS)

a. Identify and explain the functions of any three network devices. 6 marks)
b. Explain the term IP Address as used in networking.   (2 marks)
c. State the requirements for configuring TCP/IP protocol on a windows computer.   (2 marks)

d. Explain four network security measures that can be put in place to safeguard network resources. (8 marks)

e. What is data encoding in data communication? (2 marks)

QUESTION THREE (20 MARKS)

a. The following is a sample of an IP address. 192.168.123.132. Identify the parts that represents a network address and a host address. (4 marks

b. Explain the term switching as used in networking. 2 marks

c.Discuss two switching techniques. 6 marks

d. During design and implementation for the layers of computer networks, some design issues are experienced. Discuss any four of them. 8 marks

QUESTION FOUR (20 MARKS)

a. Explain the following terms as used in Data Communication.

i. Amplitude (2 marks)

ii. Period (2 marks)

iii. Phase (2 marks)

b. Discuss OSI reference model. (8 marks)

c.Differentiate between connection-oriented and connectionless services in computer networking. (4 marks)

d. State two limitations of networking. (2 marks)

QUESTION FIVE (20 MARKS)

a. Define the term multiplexing and state its importance in data communication. (4 marks)

b. Discuss two switching techniques. (6 marks)

c. Explain the following terms as used in data communication.
i. Attenuation (2 marks)
ii. Cross talk (2 marks)
iii. Noise (2 marks)

d. Distinguish between radio and microwave transmission. (4 marks)