KISII UNIVERSITY

UNIVERSITY EXAMINATIONS
SPECIAL EXAMINATION
SECOND YEAR EXAMINATION FOR THE AWARD OF DEGREE OF
BACHELOR OF SCIENCE MATHEMATICS ANDCOMPUTING
FIRST SEMESTER 2021/2022
(JULY, 2022)

COMP207: DATA COMMUNICATION

STREAM: Y2 S1   TIME: 2 HOURS

DAY: WEDNESDAY 8.00 AM – 10.00 AM   DATE: 27/07/2022

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 the following terms: [10 marks]
        (i)   Attenuation
        (ii) wavelength
        (iii) Encapsulation
        (iv) Distortion
        (v)   Data communication
    (b) Explain the difference between the following
        (i)   Guided and unguided transmission media   [2 marks]
        (ii) Half duplex and simplex modes   [2 marks]
        (iii) Synchronous and un asynchronous transmission   [2 marks]
        (iv) Serial and parallel transmission   [2 marks]
    (c) Explain two limitations of microwave transmission media   [4 marks]
    (d) Highlight four factors to be considered when selecting cabling media.
                                                                               [4 marks]
    (e) With a diagram Explain the role of each component of data
        communication system   [4 marks]

QUESTION TWO
    (a) Explain how a signal is transmitted in a taken ring topology [6 marks]
    (b) Explain the roles of the following protocol
        (i)   TCP   [2 marks]
        (ii) DHCP   [2 marks]

(iii) IP   [2 marks)
(c) Differentiate between filtering and sampling as applied in pulse code
   moderation   [4 marks]
(d) Differentiate between client – server and peer to peer models. [4 marks]

QUESTION THREE
a) Explain the following terms and state one protocol used for each ease.
                                                                            [4 marks]
   (i)   Static routing
   (ii) Dynamic routing
(a) With the aid of a diagram describe the elements of a data
   communication.   [9 marks]
(b) Describe the roles of each layer in OSI models.   [7 marks]

QUESTION FOUR
(a) Define the term parity and explain how parity is used to detect single bit
   errors.   [4 marks]
(b) List and state the functions of any two devices used in the physical layer
   of OSI networking model.   [6 marks]
(c) What is the difference between single mode and multimode optical
   filters?   [4 marks]
(d) With the aid of a well labeled diagram explain the structure of an
   Ethernet frame.   [6 marks]

QUESTION FIVE
(a) Communication channels are used for integrating of computer networks
   situated in different geographical locations. These channels are either
   bounded or unbounded
   (i)   State two advantages and two disadvantages of bounded over
          unbounded channels.   [4 marks]
   (ii)   Explain any three communication channels impairment and state
          how the same are addressed.   [12 marks]
(b) Explain the following concepts as applied to date communication lines.
   (i)   Line of sight   [2 marks]
   (ii)   Multiplexing   [2 marks]