KENYA METHODIST UNIVERSITY

END OF 1ST TRIMESTER 2010 EXAMINATIONS

FACULTY	**:**	**COMPUTING AND INFORMATICS**
DEPARTMENT	**:**	**COMPUTER INFORMATION SYSTEMS**
UNIT CODE	**:**	**BBIT 223**
UNIT TITLE	**:**	**DATA COMMUNICATION**
TIME	**:**	**2 HOURS**

Instructions:
- *Answer question 1 and any other 2 questions.*

Question 1 (30 marks)

a) Differentiate between;
   i) NEXT and FEXT
   ii) Attenuation and crosstalk
   iii) Throughput and Bandwidth

b) Give and explain any four data communications issues.   (4 mks)

c) Each data communications system consists of four basic elements. Name and explain them. (4 mks)

d) Using diagrams explain the working principles of PSK and FSK.   (6 mks)

e) Computers use flexible glass called optical fibers to transmit date, what are its advantages (give four) and disadvantages (give two) over copper wire?   (6 mks)

f) You have been given a task to analyze and assess the current and future data communications requirements of a business organization. Using an example, discuss what you will consider. (4 mks)

Question 2 (20 marks)

a) Differentiate between the following terms as used in data communications.
   i) Load and baud
   ii) Half duplex and simplex (give examples)

b) There are two major data communication frameworks that have been developed to ensure that networks meet business and communications requirements. With the aid of diagrams, compare them.   (7 mks)

c) Explain the working principles of;   (6 mks)
   i) Frame relay
   ii) ATM

d) Why is digital transmission preferred?   (3 mks)

Question 3 (20 marks)

a)   What is noise? Give and explain any four sources of noise in a communication system.
      (5 mks)

b)   With the aid of a diagram differentiate between serial data and parallel data. How is one source converted to the other?   (4 mks)

c)   Explain how each of the following occurs;
   i)   TDM
   ii)   FDM
   iii)   STDM   (6 mks)

d)   Use a diagram to explain how you would terminate a cross over cable using T168B wiring scheme.   (5 mks)

Question 4 (20 marks)

a)   Differentiate between the following terms as used in data communication.   (4 mks)
   i)   Segment and domain
   ii)   Network topology and network architecture

b)   Explain the importance of using data communication standards that adhere to international standards and show how networks of different standard can be interconnected. (6 mks)

c)   Using a diagram, explain the working principle of the following encoding schemes.
      (4 mks)
   i)   NRZ – L
   ii)   NRZ - I

d)   Differentiate between private keys, public keys and electronic signatures. (6 mks)