Kasarani Campus
Off Thika Road
Tel. 2042692 / 3
P. O. Box 49274, 00100
NAIROBI
Westlands Campus
Pamstech House
Woodvale Grove
Tel. 4442212
 Fax: 4444175

KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2016/2017 ACADEMIC YEAR
SECOND YEAR, FIRST SEMESTER EXAMINATION
FOR THE DEGREE OF BACHELOR OF SCIENCE
(COMPUTER SCIENCE)

Date: 11th August, 2016.

Time: 8.30am – 10.30am

KCS 201   - DATA COMMUNICATIONS AND NETWORKS

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS))

a)   Describe the role of a switch and explain three benefits of switching in networking.

(5 Marks)

b)   Explain the functions of the following layers of OSI model;

   i)   Transport

(2 Marks)

   ii)   Session

(2 Marks)

   iii)   Network

(2 Marks)

c)   Describe the two access services of narrowband Integrated Services Digital Network (ISDN), stating where they are applied.

(6 Marks)

d)   Explain any five factors to be considered when selecting network cables.

(5 Marks)

e)   With the aid of a diagram, explain the differences between straight through and cross-over data cables and state two applications of each.

(8 Marks)

QUESTION TWO (20 MARKS))

a)   Describe for impairments on transmission media.

(8 Marks)

b)   Distinguish guided and unguided transmission media, giving examples.

(2 Marks)

c)   Explain four situations whereby wireless networks are preferred over wired networks.

(4 Marks)

d)   With the aid of diagram, describe the Ethernet media access technology.

(6 Marks)

QUESTION THREE (20 MARKS))

a)   Distinguish Frequency Division Multiplexing and Time Division Multiplexing.

(6 Marks)

b)   Explain the following Ethernet standards, stating the cable specifications.

   i)   10 Base 2

   ii)   10 Base 5

   iii)   100 Base T

   iv)   1000 Base FL

(4 Marks)

c)   With the aid of a diagram, describe PCM transmission system.

(10 Marks)

QUESTION FOUR (20 MARKS)

a)   Derive the bandwidth of the following standard signals;

   i)   E1

   ii)   T1

(6 Marks)

b)   Explain any six advantages of digital communication.

(6 Marks)

c)   With the aid of waveform illustrations, encode the data stream 1110010101 to the following formats;

   i)   Bipolar RZ.

(2 Marks)

   ii)   Bipolar NRZ.

(2 Marks)

   iii)   Alternate Mark Inversion.

(2 Marks)

   iv)   Manchester code.

(2 Marks)

QUESTION FIVE (20 MARKS)

a) Explain the differences between;

    i) Virtual circuit and datagram.

                    (4 Marks)

    ii) Simplex and Half duplex mode.

                    (4 Marks)

b) Describe any three digital modulation techniques.

                    (6 Marks)

c) With the aid of a diagram, describe the components of a fibre optic system.

                    (6 Marks)