MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR
THIRD YEAR SECOND SEMESTER

SCHOOL OF SCIENCE AND INFORMATION SCIENCES
BACHELOR OF SCIENCE (COMPUTER SCIENCE)/INFORMATION SCIENCE

COURSE CODE: INS 2203 / COM 2207
COURSE TITLE: DATA COMMUNICATION NETWORK

INSTRUCTIONS TO CANDIDATES

Answer Question **ONE** and any other TWO questions

This paper consists of 4 printed pages. Please turn over.

SECTION A (30 Marks): Answer all questions from this section

QUESTION 1

(a)   For each of the following applications determine whether they use TCP or UDP and explain the reasons for your choice.

(4 marks)
   (i)   File transfer
   (ii) Watching a real time streamed video
   (iii)   Web browsing
   (iv)   A Voice Over IP (VoIP) telephone conversation

(b) The Internet is often described as being a "best effort network". Briefly explain what is meant by the term "best effort network"

   (2 Marks)

(c) Identify, and briefly describe, three Quality of Service (QoS) parameters that are often measured to characterize the behavior of a network or network connection

(6 Marks)

(d) Identify three physical characteristics of fiber optic cable that make it more suitable for high speed digital transmission than copper cables.   (3 Marks)

(e)   Give the TCP/IP layers in the correct order

   (5 Marks)

(f) Give four disadvantages of installing a network
(4 Marks)

(g) Explain how the ARPAnet differed from traditional computer networks

(2

Marks).

(h) What are some advantages to layering as seen in the TCP/IP architecture?
(4 Marks)

SECTION B (40 Marks): Answer any two questions from this section.

QUESTION 2

(a) How many subnets and hosts per subnet can you get from the network 172.26.0.0/25?
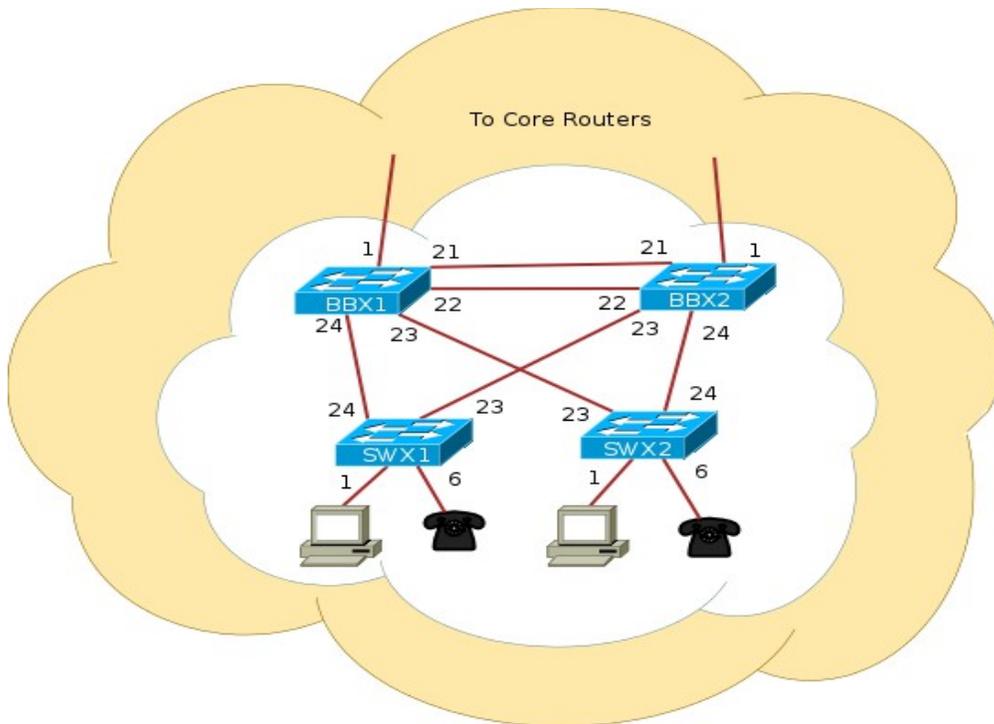(2 Marks)

(b) Give three disadvantages of fiber optic cables
(3 Marks)

(c) What tasks are performed by the transport layer?
(3 Marks)

(d) The following diagram shows four switches (BBX1, BBX2, SWX1 and SWX2)

To Core Routers

Write the commands to perform the following operations on each of the switches
 (12 Marks)
   i)   Check the configurations on the switches
   ii) Erase existing Configurations on SWX1
   iii) Name the switches BBX2 and SWX2
   iv) Configure Authentication on BBX1
   v)   Assign each switch a different IP address
   vi)   Configure Virtual LAN (VLAN)

QUESTION 3

(a)   A company is granted the site address 201.70.64.0 (class C).

   The company needs six subnets. Design the subnets

             (5 Marks)
(b)   List and briefly explain the three main functions of BGP.

   (6 Marks)
(c) Explain the security measures that can be used to protect users

   and wired Networks

   (5 Marks)

(d) How do the key requirements for computer room networks differ from those for personal computer local networks?

(2 Marks)

(e) Give some examples where traffic analysis could jeopardize security.

(2 Marks)

QUESTION 4

(a) Find the class of the following addresses

(2 Marks)

    i)   158.223.1.108

    ii)   227.13.14.88

(b) Give three key distinctions between LANs and WANs   (3 Marks)

(c) Explain five considerations when choosing a topology

(5 Marks)

(d) An asynchronous device, such as a teletype, transmits characters one at a time with unpredictable delays between characters. What problems, if any, do you foresee if such a device is connected to a LAN and allowed to transmit at will (subject to gaining access to the medium)? How might such problems be resolved?

(4 Marks)

(e) Explain any three network protocols

(6 Marks)

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