THE UNIVERSITY OF DODOMA
OFFICE OF THE DEPUTY VICE CHANCELLOR
ACADEMIC, RESEARCH AND CONSULTANCY

College of Informatics and Virtual Education
Department of Computer Science and Engineering
End of Semester II University Examinations
For the 2019/2020 Academic Year

Course Name: Introduction to Computer Networks
Paper Code Number: CN 121
Date of Examination: 21st August, 2020
Time: 08:00AM-11:00AM
Duration: 3 Hours
Venue: Auditorium and LRB 105
Sitting programme(s):
 Bsc. BIS1, CE1, CNSE1, CS1, CSDFE1, HIS1, ICT_IDIT1, IS1, MTA1, SE1 and TE1
INSTRUCTIONS TO CANDIDATES
   1. This question paper consists of **TWO** Sections with six (6) questions in six (6) printed pages.
   2. Answer **ALL** questions from section A and **Two (2)** questions from section B.
   3. Students should not take any examination paper(s) out of the examination venue
   4. All regulations guiding the administration of university examinations apply.

SECTION A (40 Marks)

QUESTION ONE

Choose the most correct answer and write down in the answer sheet provided **[1.5 Marks Each]**

i. Which of the following is not a guided media
   A. Fiber optic cable   B. Atmosphere
   C. Coaxial cable   D. Twisted pair cable

ii. What is the major factor that makes coaxial cable less susceptible to noise than twisted-pair cable?
   A. Thickness of inner-conductor   B.Cable diameter
   C. Outer conductor   D. Insulating material

iii. What is the dotted-decimal notation of 10000001 00001011 00001011 11101111?
   A. 193.131.27.255   B. 192.168.10.9
   C. 129.11.11.239   D. 172.16.11.3

iv. Which multiple access technique is used by IEEE 802.11 standard for wireless LAN?
   A. CDMA   B. CSMA/CD   C.CSMA/CA
   D. ALOHA

v. What is the maximum number of IP addresses that can be assigned to hosts on a local subnet that uses the 255.255.255.224 subnet mask?
   A. 14   B. 32   C. 62   D. 30

vi. A sender must not be able to deny sending a message that he or she, in fact, did send, is known as: -
   A. Message Integrity   B. Message Confidentiality
   C. Message Authenticity   D. Message Nonrepudiation

vii. The address to ping in order to establish if there is an IP connection to the same machine or computer being used by the end-user

    A. 127.0.0.0 B. 1.0.0.127 C. 127.0.0.1 D. 0.0.0.0

viii. Gigabit Ethernet has a data rate of _____Mbps.

    A. 10   B. 100   C. 1000   D. 10000

ix. The PDU in Data-Link layer is: -

    A. Message   B. Frame   C. Packets D. None of the above

x. Bluetooth transceiver devices operate in _____ band.

    A. 2.5GHz   B. 2.6GHz   C. 5GHz   D. 2.4GHz

QUESTION TWO

Write **T** for a TRUE statement and **F** for a FALSE statement

[1.5 Marks Each]

i. In CSMA/CD the chance of collision can be reduced if a station senses the medium before trying to use it.

ii. The size of IP address in IPV6 is 128 bits.

iii. Message confidentiality means the data must arrive at the receiver exactly as sent.

iv. An important function of the physical layer of the OSI model is to encode frames into electrical, optical, or radio wave signals.

v. Straight through connection in UTP is used to connect dissimilar types of Ethernet equipment.

vi. Router is a layer 2 networking device.

vii. Once the network security policy is in place within the organization, the people it affects do not necessarily need to know it well.

viii. The frequency range (Bandwidth) of the IEEE 802.11a standard is 5GHz

ix. /28 in 152.16.168.196/28 in logical addressing means that there are 28 bits in the host portion of the IP address.

x. On Ethernet LAN when collision occurs, all stations run a random back off algorithm. When the back off delay period has expired, all stations have equal priority to transmit data.

QUESTION THREE

Write down the services associated with each of the following port number   **[2Marks Each]**

i. 21
ii. 443
iii. 25
iv. 23
v. 22

SECTION B (60 Marks)

QUESTION FOUR

a) Explain how the collision is avoided in the below listed LAN technologies **[3 Marks Each]**

    i. Ethernet

    ii. Token Ring

b) List down the four security objectives. **[4 Marks]**

c) With the help of a diagram, explain the four types of security attacks. **[1.5 Marks Each]**

d) With the aid of diagram, briefly explain the function of each field of Data link layer frame format. **[8 Marks]**

e) Briefly explain the TCP/IP Layers each with its functionalities **[6 Marks]**

QUESTION FIVE

a) List four advantages of layered approach in computer communication **[2 Marks Each]**

b) Find classes of the following IP addresses. **[3 Marks Each]**

    i. 00000101 00010101 00001100 00001110

    ii. 11110011 10011011 11001100 00000001

c) Write the subnet-network address, broadcast address, and the valid host range for the IP address 192.16.10.33/27

[9 Marks]

d) What is the subnetwork address if the destination address is 200.45.34.56 and the subnet mask is 255.255.240.0?

[3 Marks]

e) Given a class C IP address, you need to subnet a network that has 12 subnets, each with at least 10 hosts. Which subnet mask would you use? **[4 Marks]**

QUESTION SIX

a) With the aid of diagram clearly explain the advantages and disadvantages of at least four types of network physical topology. **[12 Marks]**

b) What Is Ipconfig Command? Why It Is Used? **[4 Marks]**

c) What is the purpose of cables being shielded and having twisted pairs? **[4 Marks]**

d) Subnet the Class C IP Address 195.1.1.0 So that you have 10 subnets each with a maximum 12 hosts on each subnet. For each of the subnetwork list the first and last host address. **[10 Marks]**