NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI-
ABUJA
FACULTY OF SCIENCE
DEPARTMENT OF COMPUTER SCIENCE 12M
JANUARY 2021 EXAMINATION

COURSE CODE: DAM361
COURSE TITLE: BUSINESS COMMUNICATION AND NETWORKS
CREDIT UNIT: 2
TIME ALLOWED : 2 Hours
INSTRUCTION: ANSWER QUESTION ONE (1) AND ANY THREE OTHERS

1 a. What is transmission medium/media? (**1mark**)
 b. Explain with examples of two types of transmission media (**6marks**)
 c. What is MAC address and IP address? (**1mark**)
 d. Differentiate between MAC address and IP address (**3marks**)
 e. What is difference between The Internet and The Web? (**1marks**)
 f. Historically, how did TCP/IP emerged? (**3marks**)
 g. Indicate the meaning of the acronym of the common protocols of TCP/IP - HTTP, HTTPS,
   FTP. (**3marks**)
 h. You have been allocated a class A network address of **29.0.0.0**. You need to create at least
  20 networks and each network will support a maximum of 160 hosts. Would the following
  two subnet masks - **255.255.0.0** and or **255.255.255.0- w**ork? (**3marks**)
 i. What are these three forms of business organizations that are recognized in Nigeria? Provide
   a definition of each of the forms of the business organization you specified   (**4marks**)
    1. sole proprietorship
    2. general partnership
    3. corporation
    4. limited liability company

Question 2
a. Explain the types of networking media would be most appropriate for the following scenarios and
justify the reasons for selecting it. (**4 marks**)
b. An IT research lab researching big data search and storage solutions with data center research facilities
   located across a large geographic area (**4 marks**)
c. A festival venue based at a farm with a fixed broadband connection, where several thousand festival
   goers attend a festival several times a year and for the remaining time the fields are used for sheep
   grazing   (**4 marks**)

d. Explain and justify which IP routing protocol is best for WAN connectivity in a scenario where two large organization either by merge or acquisition become one organization with different vendor's routers and they want to minimize the impact of routing changes between the organizations **(3 marks)**

Question 3:

a. Briefly discuss the functions of each of the following terms and explain their relationship to WAN connectivity.

      i. DCE (Data Communications Equipment)   **(2marks)**

      ii. DTE (Data Termination Equipment)   **(2marks)**

      iii.   CSU/DSU/NTU (Channel Service Unit/Data Service Unit/Network Terminating Unit)   **(3marks)**

      iv. CPE (Customer Premises Equipment)   **(2marks)**

      v.. Demarcation point - Also called point of demarcation (POD)   **(2marks)**

      vi. Local loop   **(1mark)**

b.. Discuss why fiber optic cables are more suitable than copper wired or wireless media for high voltage AC environments.   **(3marks)**

Question 4

a.. Explain the key protocol and operational differences between Ethernet (IEE 802.3) and Wireless LAN's (IEEE80.11)   **(3marks)**

b. Study the diagram provided and answer each of the following question
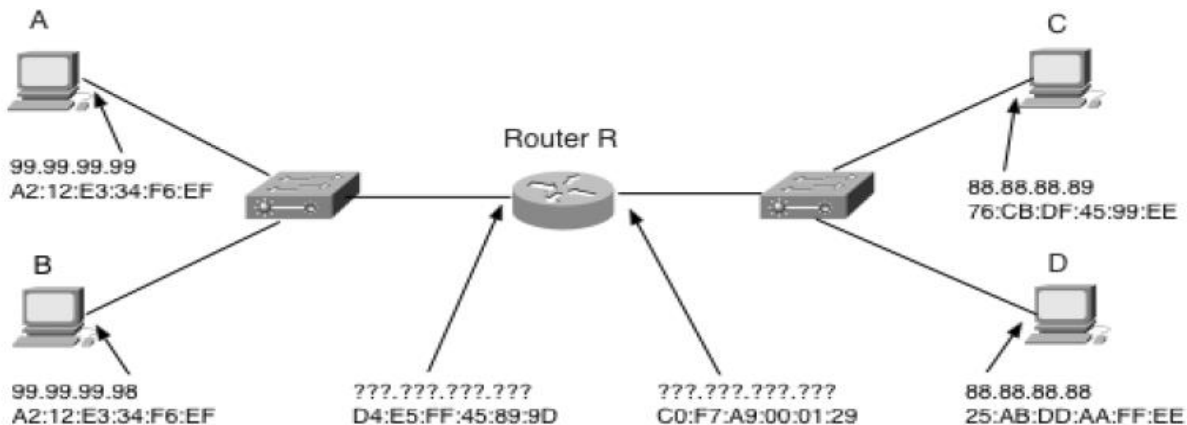
i. Given that the subnet mask used in the scenario is /24: Explain which IP addresses can be assigned and the ones not assigned to the computers or hosts in both the left and right side of the router R and indicate why?

          (5marks)

      ii. Which IP addresses can be assigned to the left and right interfaces interface of the router R

          (2marks)

iii. Suppose computer A wants to send an IP datagram to computer B and knows B's IP address. Does computer A need to know computer B's MAC address to send the datagram to computer B? If yes, explain the operation used by A to obtain B's MAC address. If not, explain why not and what information would be used for the datagram to arrive to computer B.

(3marks)

iv. Suppose computer A wants to send an IP datagram to computer C and knows C's IP address. Does computer A also need to know C's MAC address to send the datagram to computer C? If yes, explain the operation used by A to obtain C's MAC address. If not, explain why not and what information would be used for the datagram to arrive to computer C.

(2marks)

Question 5

a. How can you identify the IP class of a given IP address? **(4marks)**

b. Given the following protocols, indicate in which layer of the TCP/IP protocol architecture each can be found? **(3marks)**

i. Ethernet

ii. SMTP

iii. Optical fiber

c. What is Domain Name Service (DNS). **(3marks)**

d. How DNS queries are resolved in the DNS system with recursive and iterative queries

(2marks)

e. What is the difference between Network Hub, Network Switch, and Network Router? **(3marks)**