UGANDA BUSINESS AND TECHNICAL EXAMINATIONS BOARD

Business and Humanities Certificate Examinations

MAY-JUNE 2024 SERIES

PROGRAMME

NATIONAL CERTIFICATE IN INFORMATION AND COMMUNICATION TECHNOLOGY

PAPER NAME

NETWORKING AND DATA COMMUNICATION

PAPER CODE

NCIT212

YEAR II, SEMESTER I

2½ HOURS

THURSDAY, 16TH MAY, 2024

INSTRUCTIONS TO CANDIDATES

1. *This paper consists of **two** sections **A** and **B**.*
2. *Section **A** is compulsory and carries **20** marks.*
3. *Section **B** consists of **six** questions. Answer only **four** questions from this section.*
4. *All questions carry equal marks.*
5. *All answers to each question should begin on a fresh page.*
6. *All answers and rough work should be written in the official answer booklet provided.*
7. ***Do not** write on the question paper.*
8. *Read other instructions on the answer booklet.*

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SECTION A- (20 MARKS)

Answer all questions in this section.

Question One

(a) Define the term **topology**. (02 marks)

(b) List **two** networking devices used for setting up a WAN. (02 marks)

(c) Explain **two** security precautions to take when using public networks. (04 marks)

(d) Outline **two** advantages of internet connection to a farmer in Buikwe district. (02 marks)

(e) Describe the parts of an Internet Protocol (IP) address. (02 marks)

(f) Communication between two devices can occur in three modes.

(i) List the **three** modes. (03 marks)

(ii) Explain the method of operations for each mode in 1(f)(i). (03 marks)

(g) Name **two** examples of transmissions impairments on a network media. (02 marks)

SECTION B - (80 MARKS)

Answer only four questions from this section.

Question Two

(a) Rachel realized that she could not connect to the internet using her laptop using both WiFi and Ethernet cable. When she took to the technician, it was discovered that, the network card was lacking software required to connect to the internet.

(i) State the lacking software. (02 marks)

(ii) Describe the step used to check for the missing software. (04 marks)

(iii) Using the TCP/IP model, explain **two** functions of the layer under which the software operates. (04 marks)

(b) Explain **five** advantages of using digital signals over analog signals in modern communication systems. (10 marks)

Question Three

(a) Define the term **subnetting** as used in networking. (02 marks)

(b) Explain the difference between **classful addressing** and **classless addressing** in IPv4. (04 marks)

(c) A network administrator found the following information in one of the devices in the network;

The default gateway address as 172.10.10.1.

Physical address as 66-80-99-C4-41-C3.

Host Name DESKTOP-49202EA

(i) Identify the **MAC address** and **IP address** from the above information. (04 marks)

(ii) State the command used in displaying the information above. (02 marks)

(iii) Describe the steps taken to assign the IP address to a host. (08 marks)

Question Four

NOV Bread Company wants to extend a network connection to one of their buildings that is just next to the factory. They also have a branch in Jinja and they want to make sure that all the company systems at both branches are accessed only by their staff within the same network.

(a) State the type of network connection that they need to setup to link up the two branches on one network. (02 marks)

(b) Describe the suitable **network topology** that can be used to achieve that goal. (08 marks)

(c) Explain **two** challenges faced during network extensions. (06 marks)

(d) List **four** cyber security threats NOV Bread Company employees are mostly to face as result of sharing information between two branches. (04 marks)

Question Five

(a) State **two** factors that affect internet connectivity in Uganda. (02 marks)

(b) Explain the following terms as used in computer networks.

(i) Internet Service Provider. (02 marks)

(ii) World Wide Web. (02 marks)

(c) Describe **three** advantages of having an internet connection today. (06 marks)

(d) Explain **four** disadvantages presented by internet connectivity in today's lifestyle. (08 marks)

Question Six

(a) Define a **network** as used in computer networks. (02 marks)

(b) Explain the following network communication terms

(i) Unicast (02 marks)

(ii) Broadcast (02 marks)

(iii) Multicast (02 marks)

(c) Illustrate the layout of **Server based networks**. (04 marks)

(d) Explain **four** benefits of a peer-to-peer networks. (08 marks)

Question Seven

(a) JOWERIA wants to setup a small network of about four computers at her work place to enable sharing of resources and access to internet.

(i) List **two** devices that she will require. (02 marks)

(ii) State the type of cables she will need assuming the network will be established using cables. (02 marks)

(iii) Explain **three** classes of IP address that she can use. (06 marks)

(b) Outline **two** major categories of transmission media. (02 marks)

(c) Explain the difference between **guided media** and **unguided media**. (08 marks)

END