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**GASABO DISTRICT**

**DISTRICT COMPREHENSIVE ASSESSMENT, RTQF LEVEL… 2022-2023**

**TRADE: NETWORKING AND INTERNET TECHNOLOGIES**

**MODULE: NETWORK FUNDAMENTALS**

**DATE OF EXAM: ………………………… Duration: ………….**

**ACADEMIC YEAR: 2022-2023**

**Instructions:**

1. **Answer all questions in section A (55 Marks)**
2. **Answer three question in section B (30 Marks)**
3. **Answer one question in section c (15 Marks**)

**ANSWER SHEET**

**Section A**

Q1. Define computer network? **2marks**

* **A computer network is a set of computers sharing resources located on or provided by network nodes**

Q2. What is the benefit of network in real life? **4marks**

* **Ease of accessibility. Modern computer networks are easy to explore**
* **Convenient resource sharing**
* **Connectivity**
* **Security**
* **Great storage capacity**
* **Reduced cost**

Q3. As technician what is the classification of network by geographical area? **4marks**

* **LAN**
* **PAN**
* **MAN**
* **WAN**
* **CAN**

Q4. We have network technologies what are the technologies below? **4marks**

1. IEEE802.3 **Ethernet**
2. IEEE802.11 **wireless**

Q5. Description of network topology by definition and types of topology? **4marks**

* **Physical topology:** **describes how network devices (called computers, stations, or nodes) are physically connected in a computer network**
* **Software topology: maps the applications and components from the solution onto the hardware topology**

Q5 Examine the advantages of topology? **4marks**

* **Topology offers simplicity of operation**
* **It also achieves isolation of each device in the network.**
* **Adding or removing network nodes is easy, and can be done without affecting the entire network.**
* **Due to the centralized nature, it is easy to detect faults in the network devices**

Q6. What are the components of network? **4marks**

* **Hardware**
* **Software**
* **Protocols**
* **media**

Q7. As an IT of level 3 describe the classification of network devices? **3marks**

* **Interconnecting devices**
* **Access devices**
* **Security device**
* **End devices**

Q8. Explain two types of standard? **3marks**

**De Facto standards:** A format, or protocol that has become a standard not because it has been approved by a standards organization but because it is widely used and recognized by the industry as being standard.

**De Jure standards**: De jure standards are those which have been approved by formal authorities like the Institute of Electrical and Electronics Engineers (IEEE) and the International Organization for Standardization (ISO).

Q9. Define protocol and what the function of protocols? **4marks**

* **Protocols is a set of rules that govern network communication**

Q10. What is importance of standard organizations? **4marks**

* **Standards organizations are usually vendor-neutral, non-profit organizations established to develop and promote the concept of open standards**.

**Q11. Multiple questions 2mark for each question**.

1. In what type of topology do all of the computers directly tap into the same cable
2. Ring
3. **Bus**
4. Star
5. Mesh
6. Which network topology provides multiple communication paths so that an alternative path may be used if a connection fails?
7. Ring
8. Bus
9. Star
10. **Mesh**
11. The largest WAN is the internet.
12. **True**
13. False
14. Computer network require both hardware and software.
15. **True**
16. False
17. Even large networks have only one server.
18. True
19. **False**
20. A gateway connects networks using different communications.
21. **True**
22. False
23. A server provides a service to one or may clients to share files, folder or printer.
24. **True**
25. False
26. A LAN or(local area network) connects computers a cross the world.
    1. True
    2. **False**
27. A router is a device that performs the same tasks as a hub.
28. True
29. **False**
30. Protocols are rules that computer uses to communicate.
31. **True**
32. False
33. OSI stands for
34. **Open system interconnection**
35. Operating system interface
36. Optical service implementation
37. None of the mentioned

**Section b choose only 3 10 marks for each**

Q11.Match the following

Class C 🡪 24 network 8-Host

Class A 🡪 8-Host 24 Network

Class B 🡪 16-Host 16-Network

**Class B🡪 24 network 8 Host**

**Class C🡪 8-Host 24 Network**

**Class B 🡪 16-Host 16-Network**

Q12. Give and explain the seven layers of OSI?

* Physical: The lowest layer of the OSI Model is concerned with electrically or optically transmitting raw unstructured data bits across the network from the physical layer of the sending device to the physical layer of the receiving device
* Data Link: At the data link layer, directly connected nodes are used to perform node-to-node data transfer where data is packaged into frames
* Network:  is responsible for receiving frames from the data link layer, and delivering them to their intended destinations among based on the addresses contained inside the frame.
* Transport: manages the delivery and error checking of data packets
* Session:  controls the conversations between different computers
* Presentation:  formats or translates data for the application layer based on the syntax or semantics that the application accepts
* Application: At this layer, both the end user and the application layer interact directly with the software application.

Q13. Differentiate Private IP Address and public IP Address with examples?

Q14. Explain the methods of assigning ip address to the computer?

* **Static ip address assigning method: user or administrator assign manually.**
* **Dynamic ip address assigning method: it provides by dhcp services**

Q15. Differentiate ip addressing forms which are Unicasts, Broadcast and Multicast

Unicast: is a process of sending packets from one host to individual host

Multicast: is a process of sending packets from one host to selected group of host

Broadcast: is a process of sending packets from one host to all hosts connected on network.

**SECTION C CHOOSE ONLY ONE 15 MARKS**

Q16. In calculation of IP addresses.

1. Convert binary to decimal conversion

a)10100011=**(1×27) +(0×26) +(1×25) +(0×24)+(0×23) +(0×22) +(1×21) +(0×20)**

=**128+0+32+0+0+2+1**

**=163**

1. Decimal to binary conversion

b) 1210=**11002**

3. Hexadecimal to decimal conversion.

c) 111101111011=**F7B**