Name : Muhammad Musa

Department : BS(CS)

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ID # : 15366

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Subject : Data Communication And Network (Theory)

Submitted To : Engr. Ghassan Husnain Sir

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Question 1:

(a) What is an Internet Draft?

Ans:

Internet Draft:

An **Internet Draft** is a document published by the Internet Engineering Task Force (IETF) containing preliminary technical specifications, results of networking-related research, or other technical information. Often, Internet Drafts are intended to be work-in-progress documents for work that is eventually to be published as a Request for Comments (RFC) potentially leading to an Internet Standard.

An Internet Draft is only valid for six months, unless it is replaced by an updated version. An otherwise expired draft remains valid while it is under official review by the Internet Engineering Steering Group (IESG) when a request to publish it as an RFC has been submitted. Expired drafts are replaced with a "tombstone" version and remain available for reference.

(b) What are the differences between a Proposed Standard, Draft Standard, and Standard?

Ans:

Proposed Standard:

A Proposed Standard specification is stable, has resolved known design choices, has received significant community review, and appears to enjoy enough community interest to be considered valuable. Usually, neither implementation nor operational experience is required for the designation of a specification as a Proposed Standard.

Proposed Standards are of such quality that implementations can be deployed in the Internet. However, as with all technical specifications, Proposed Standards may be revised if problems are found or better solutions are identified, when experiences with deploying implementations of such technologies at scale is gathered.

Draft Standard:

A Draft Standard is a third classification that was discontinued in 2011. A Draft Standard was an intermediary step that occurred after a Proposed Standard but prior to an Internet Standard.

A Draft Standard must be well-understood and known to be quite stable, both in its semantics and as a basis for developing an implementation.

A Draft Standard is normally considered to be a final specification, and changes are likely to be made only to solve specific problems encountered.

Standard:

A Standard (which may be referred to as Internet Standard) is characterized by a high degree of technical maturity and by a generally held belief that the specified protocol or service provides significant benefit to the Internet community. Generally Internet Standards cover interoperability of systems on the Internet through defining protocols, message formats, schemas, and languages. The most fundamental of the Internet Standards are the ones defining the Internet Protocol.

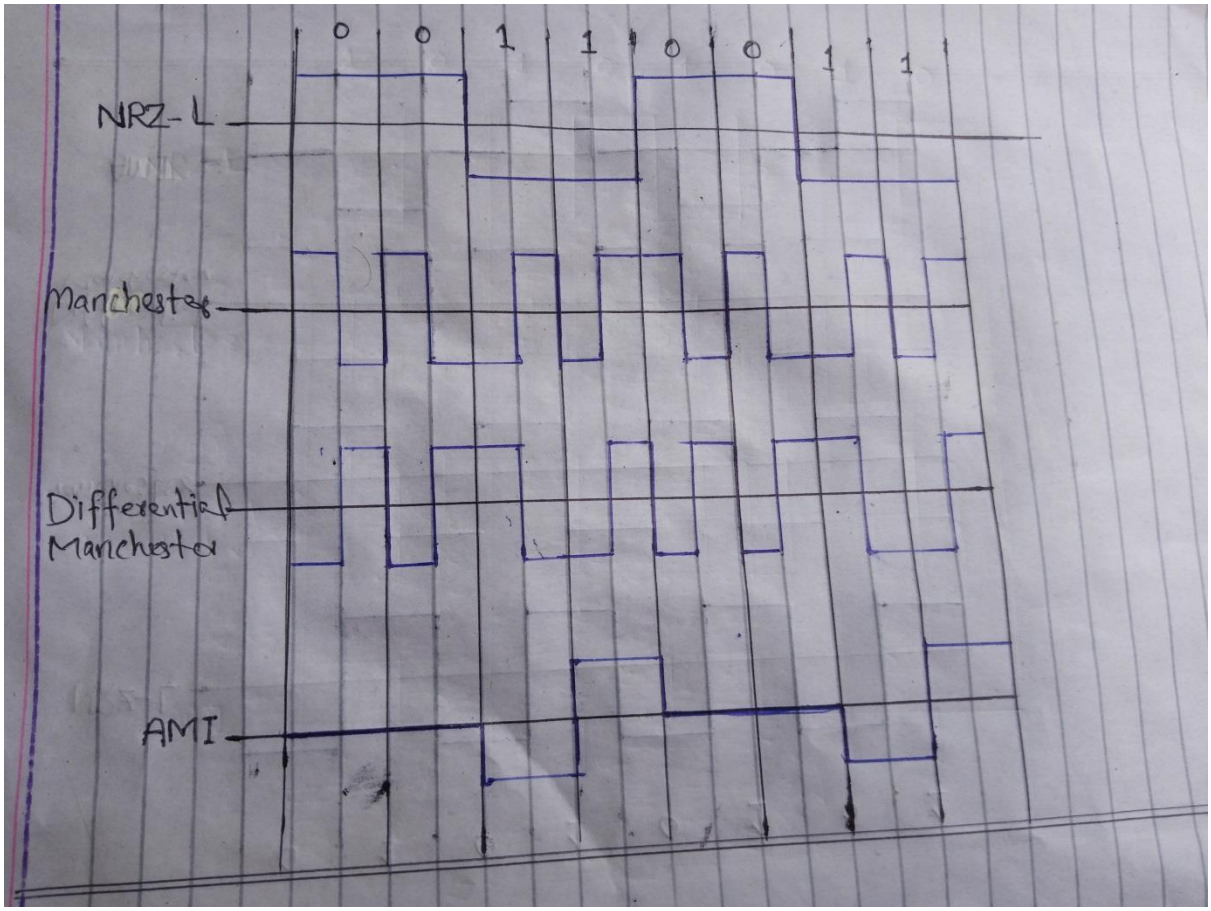
An Internet Standard ensures that hardware and software produced by different vendors can work together. Having a standard makes it much easier to develop software and hardware that link different networks because software and hardware can be developed one layer at a time. Normally, the standards used in data communication are called protocols.

Question 2: Draw the graph of the NRZ-L, Manchester, Differential Manchester, and AMI schemes of the following data streams:

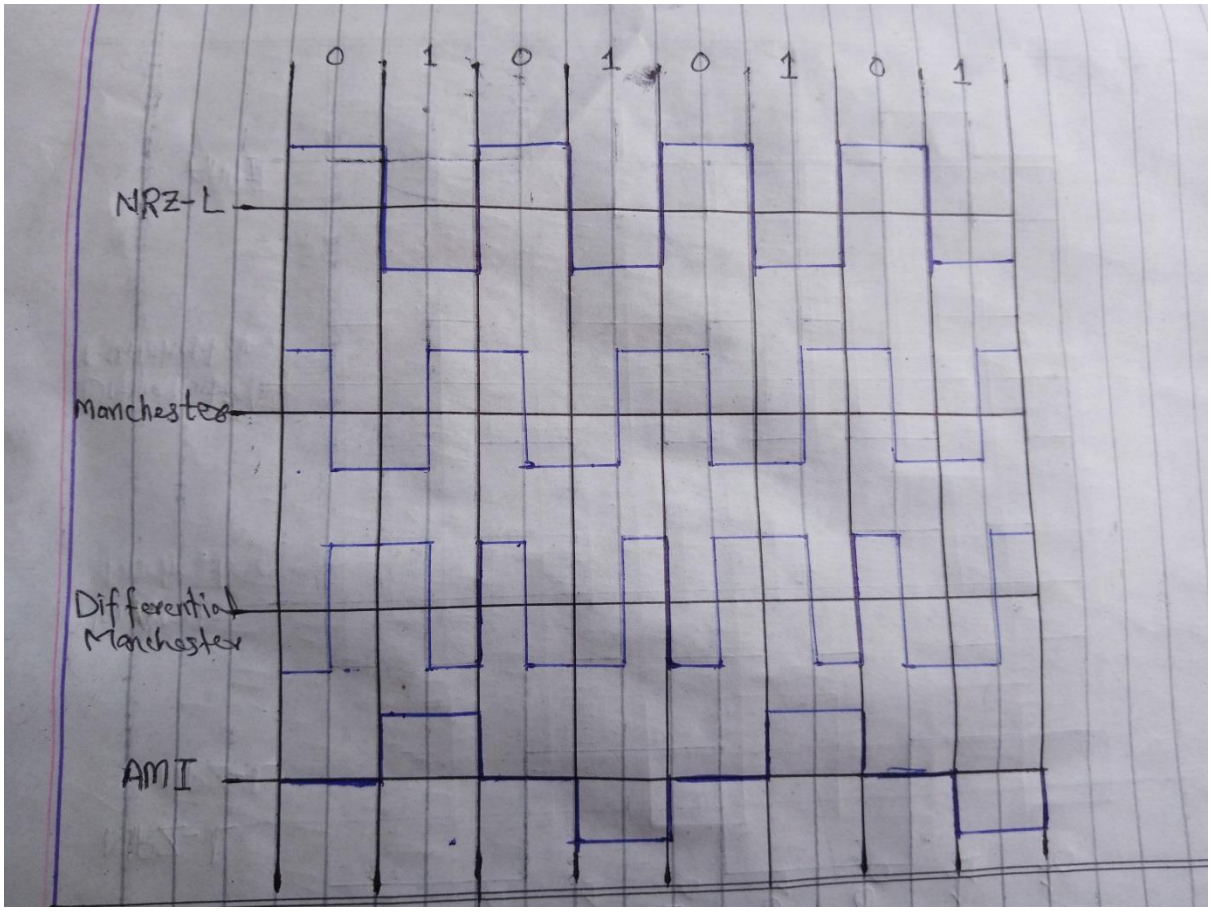
- 00110011
- 01010101
- 10101010

Ans:

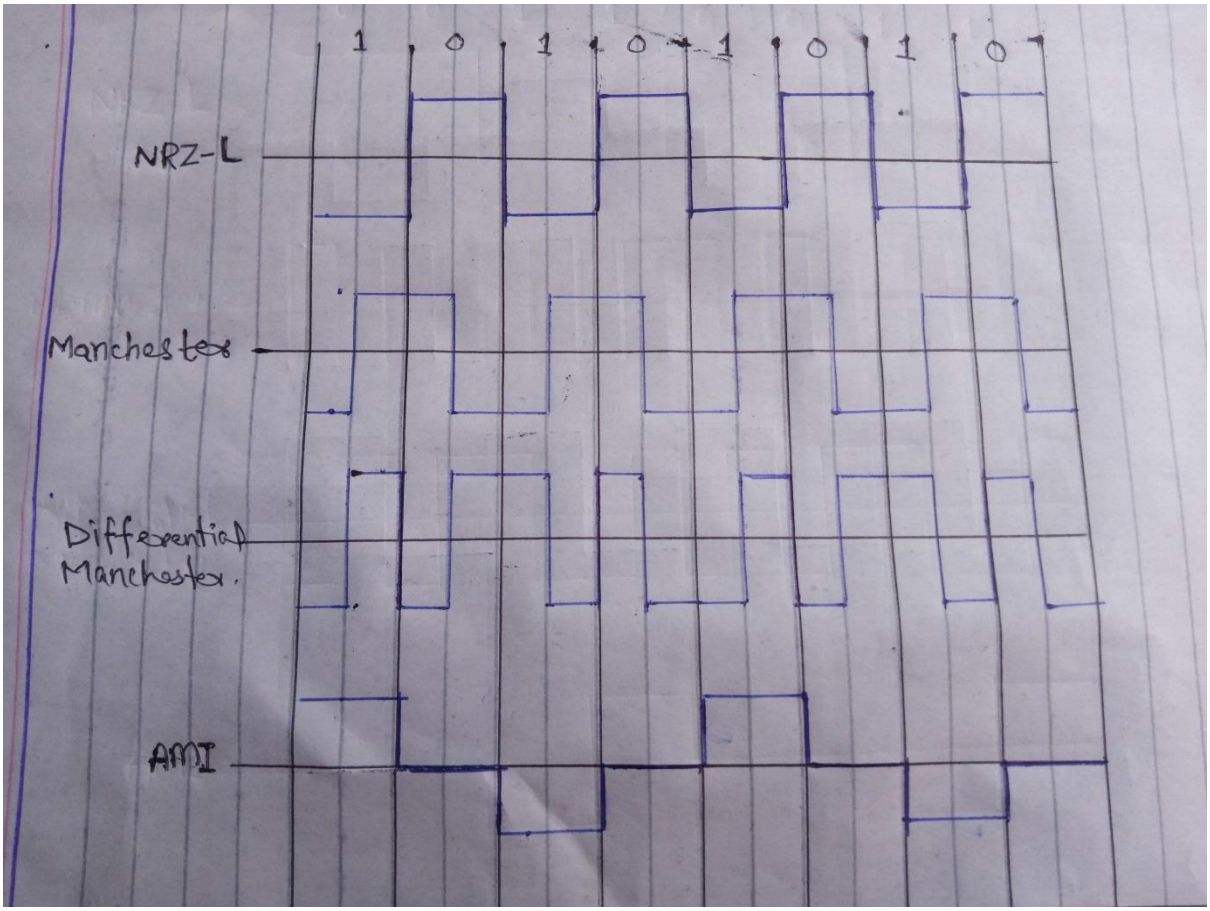
- 00110011



- 01010101



- 10101010



Question 3: You are working as a Network Specialist in ABC organization. You are asked to do research on the **current and future Wireless Networks issues and challenges**?

Ans:

Current and future issues:

1. Mobility:

The current Internet, designed for stationary end-hosts, does not handle mobility easily within the Internet architecture. The issue of mobility relates to handling changes in location and underlying network connectivity of mobile end-systems at each protocol layer. Note that in this paper, we focus on host mobility. Network Mobility (NEMO) (RFC 3693, 2005), or site mobility, is out of scope of this paper. However, some of the techniques for host mobility can be extended to support network mobility and site mobility as well.

2. Multihoming:

In the past, most hosts/nodes or computers had only one networking interface. Hosts stayed within one network with one egress path. However, multi homed hosts or devices having multiple networking interfaces are becoming more common. Additionally, users may be multi homed too. Each

user can be reached through many different hosts, such as computers, PDAs (Personal Digital Assistant), and cellular phones. We call this user multi homing. Finally, the network that users reside in may have several egress paths as well. This is the so-called site multi homing.

3. **Routing Scalability:**
   A common solution for IP network sites to allow changing their service providers is to use Provider Independent (PI) addresses. However, these addresses are not aggregable and lead to an exponential increase in size of the routing table in Default Free Zones (DFZs) (RFC 4984, 2007).
4. **Deploy ability:**
   Deploy ability of new mechanisms is an extremely important factor. The literature is rife with examples of technically superior proposals that have seen limited or no deployment in the real world owing to the lack of a proper and practical deployment plan.

CURRENT AND FUTURE CHALLENGES:

1. **Physical connectivity:**
   According to the study, a key challenge to the use of wireless networks is the physical construction of healthcare facilities and trouble accessing broadband network. Participants identified specific challenges, such as limitations on wireless signals, particularly in older facilities, on lower floors, in basement areas and from some new construction materials such as steel-encased buildings with glazed windows that deflect cellular signals.
2. **Technology connectivity issues:**
   Participants said connectivity issues also arise from the addition of applications to the network that operate in a proprietary environment. Some ways to address this issue include working with vendors to either move away from the use of proprietary solutions or to upgrade to an environment that accepts multiple versions of 802.11 standards.
3. **Meeting user demand:**
   According to the study, one concern is that wireless technology fulfills its promise to improve productivity without requiring end users to become “IT experts.” For example, respondents found that when clinicians come up against a problem, they seek alternative solutions that can sometimes further aggravate the network or will purchase technology that the IT department cannot support.

4. **Network as Sensor:**

We can use wireless networks for more than just data transfer. Network devices are constantly painting their environments with radio waves; how those waves are reflected back provides useful information about the environment.

Today, we can use various techniques to geolocation devices indoors, where GPS doesn’t work: We collect data based on received signal strength, time-of-flight, and angle-of-arrival to estimate the location of various devices relative to indoor APs. Improving the accuracy, frequency, and scale of estimating indoor locations can open up many applications, like autonomous indoor robots.