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Data Communication

Sessional Assignment- Spring 2020

Question 1: Go to www.ietf.org/rfc.html and look up RFC 2026 and read it. Answer these questions:

(a) What is an Internet Draft?

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

Ans: (a)

Internet Draft is a series of working documents published by the IETF. Typically, they are drafts for RFCs,
but may be other works in progress not intended for publication as RFCs. During the development of a
specification, draft versions of the document are made available for informal review and comment by
placing them in the IETF's Internet-Drafts directory. This makes an evolving working document readily
available to a wide audience, facilitating the process of review and revision.
Internet-Drafts have no formal status, and are subject to change or removal at any time therefore they should not be cited or quoted in any formal document.

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

Ans:

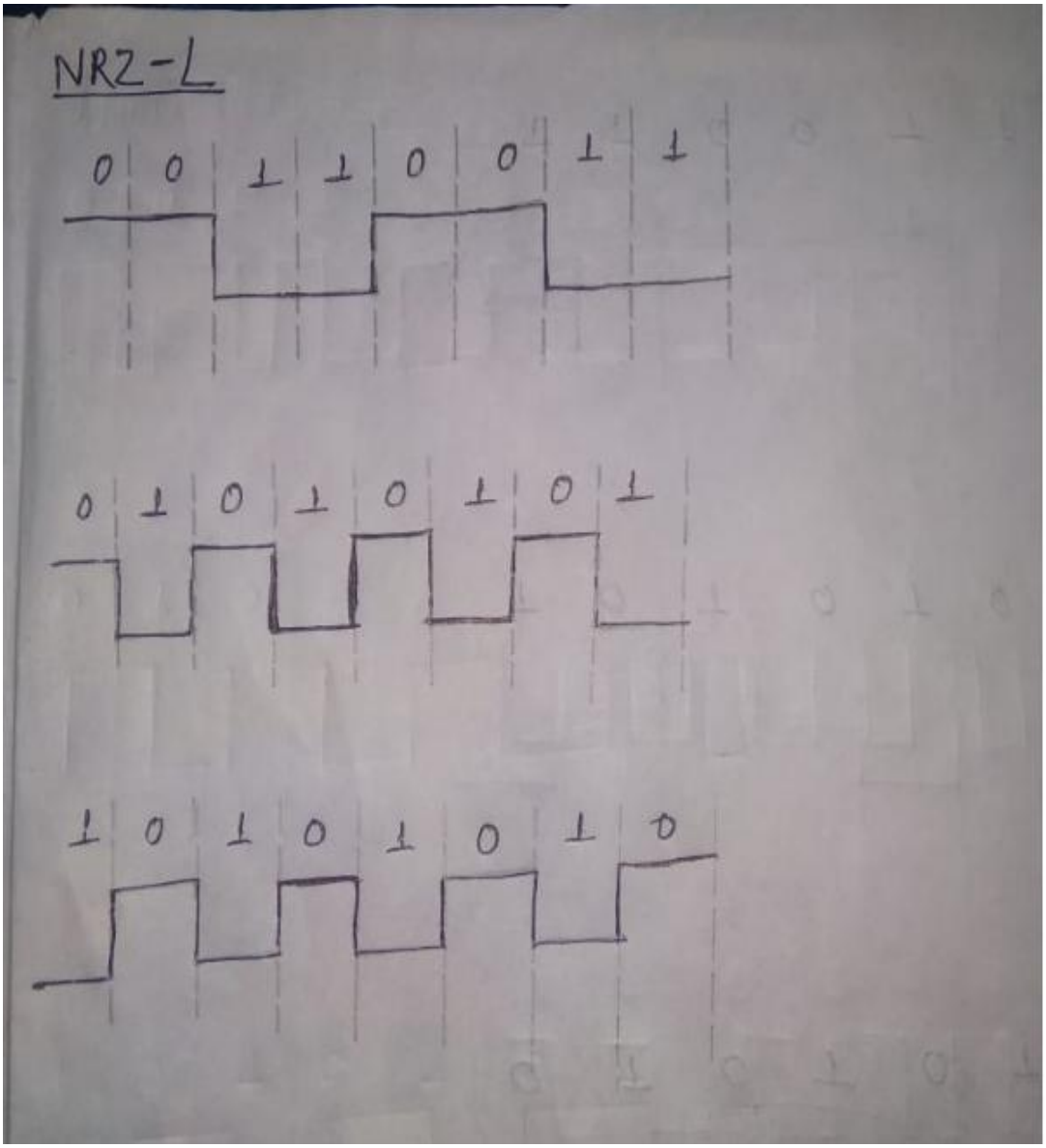
	Proposed Standard	Draft Standard	Standard
1)	The entry-level maturity for the standards track is "Proposed Standard". A specific action by the IESG is required to move a specification onto the standards track at the "Proposed Standard" level.	A specification from which at least two independent and interoperable implementations from different code bases have been developed, and for which sufficient successful operational experience has been obtained, may be	A specification for which significant implementation and successful operational experience has been obtained may be elevated to the Internet Standard level.

		elevated to the "Draft Standard" level.	
2)	A Proposed Standard specification is generally stable, has resolved known design choices, is believed to be well-understood, has received significant community review, and appears to enjoy enough community interest to be considered valuable.	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.	An Internet Standard (which may simply be referred to as a 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.
3)	Further experience might result in a change or even retraction of the specification before it advances.	A Draft Standard is normally considered to be a final specification, and changes are likely to be made only to solve specific problems encountered.	All specifications unconditionally accepted.
4)	Usually, neither implementation nor operational experience is required for the designation of a specification as a Proposed Standard. However, such experience is highly desirable, and will usually represent a strong argument in favour of a Proposed Standard designation.	The requirement for at least two independent and interoperable implementations applies to all of the options and features of the specification. In cases in which one or more options or features have not been demonstrated in at least two interoperable implementations, the specification may advance to the Draft Standard level only if those options or features are removed.	Has cleared requirements of both Proposed and Draft and beyond.
5)	It is desirable to implement them in order to gain experience and to validate, test, and clarify the specification. However, since the content of Proposed Standards may be changed if problems are found or better solutions are identified, deploying implementations of such standards into a disruption-	In most circumstances, it is reasonable for vendors to deploy implementations of Draft Standards into a disruption sensitive environment.	Completely acceptable to run in a disruption sensitive environment.

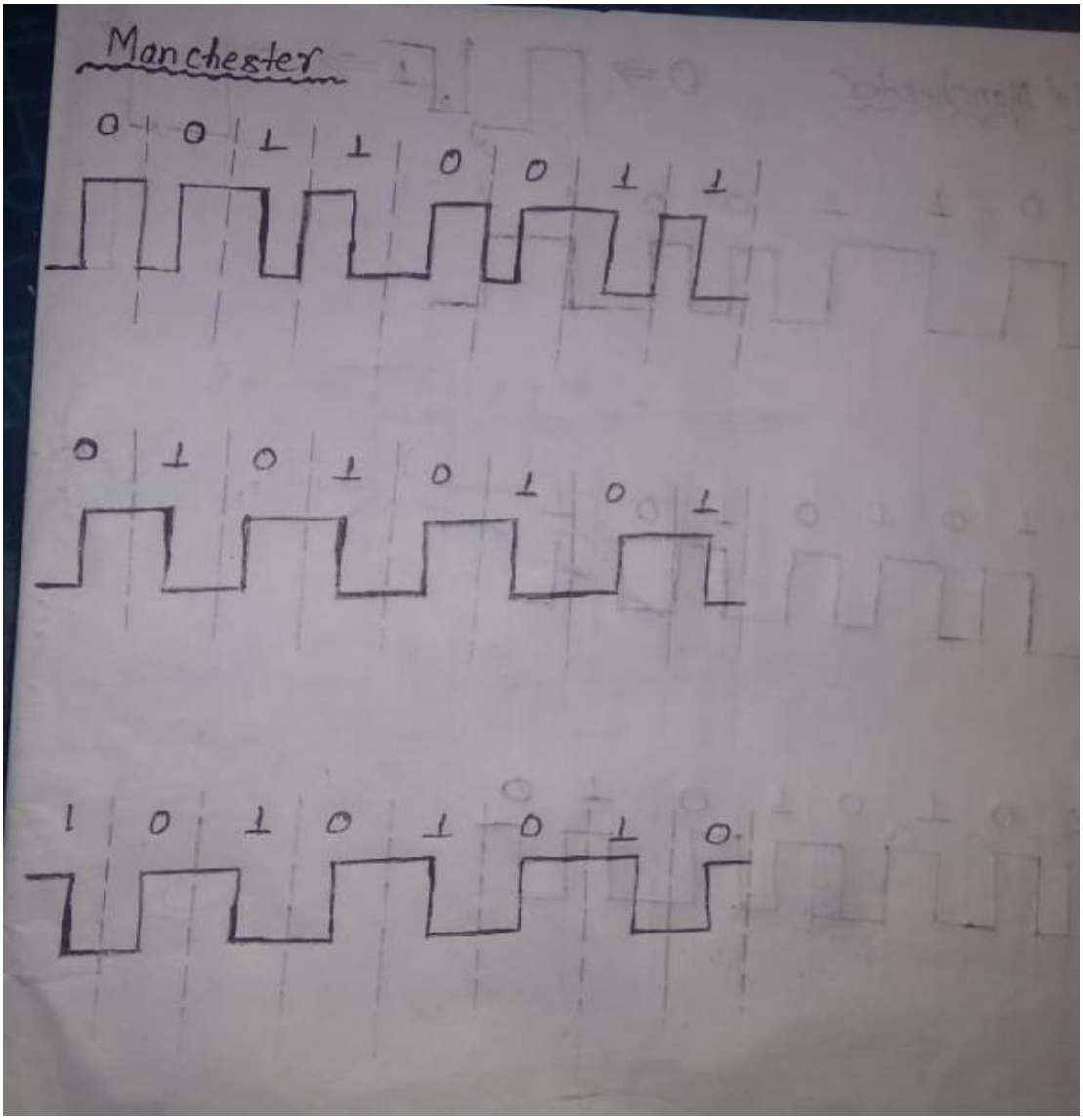
<u>Question 2:</u> Draw the graph of the NRZ-L, Manchester, Differential Manchester, and AMI schemes of the following data streams:

- **00110011**
- **01010101**
- **10101010**

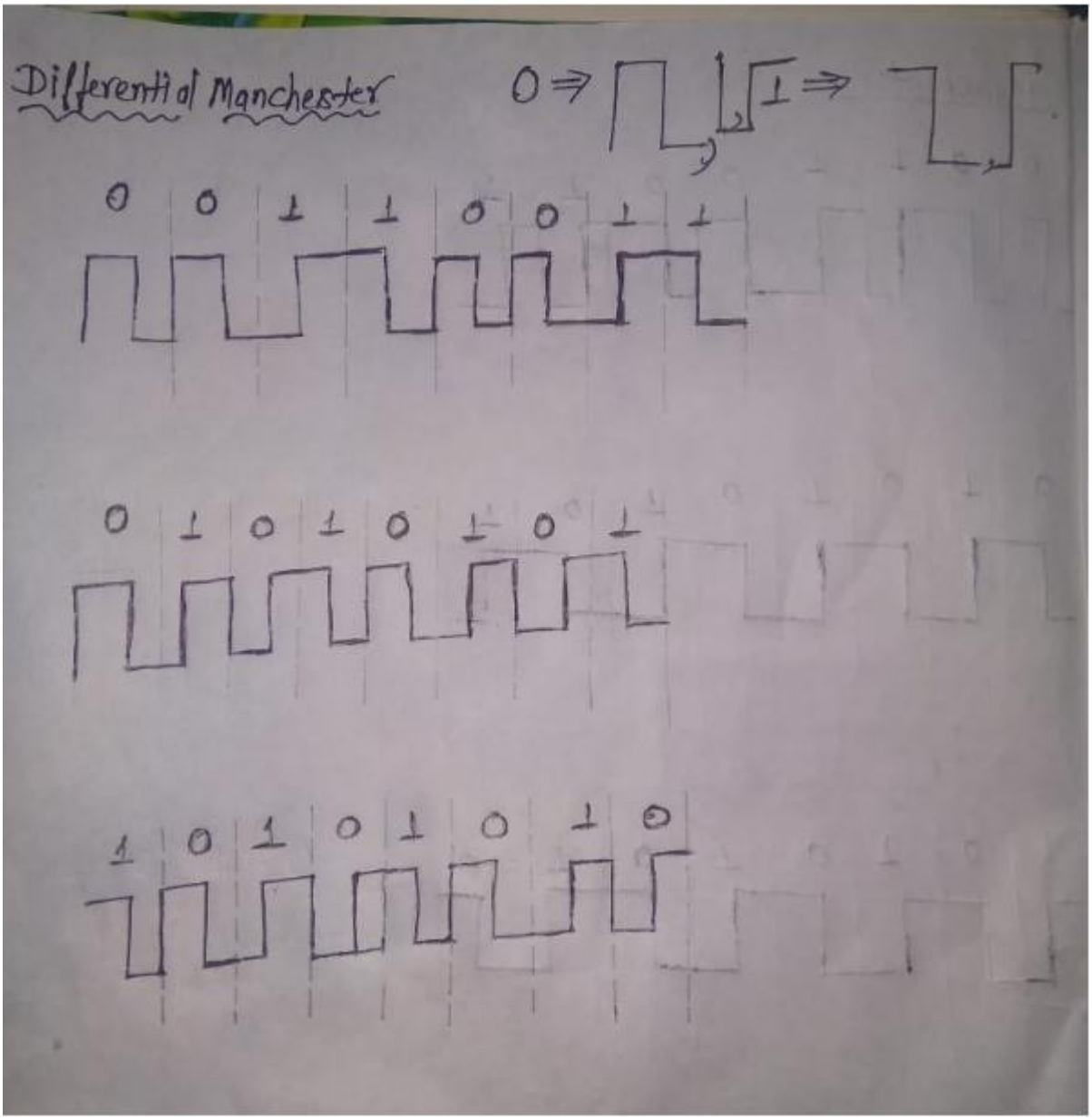
Ans: NRZ-L (Non-return-to-zero-level) graph:



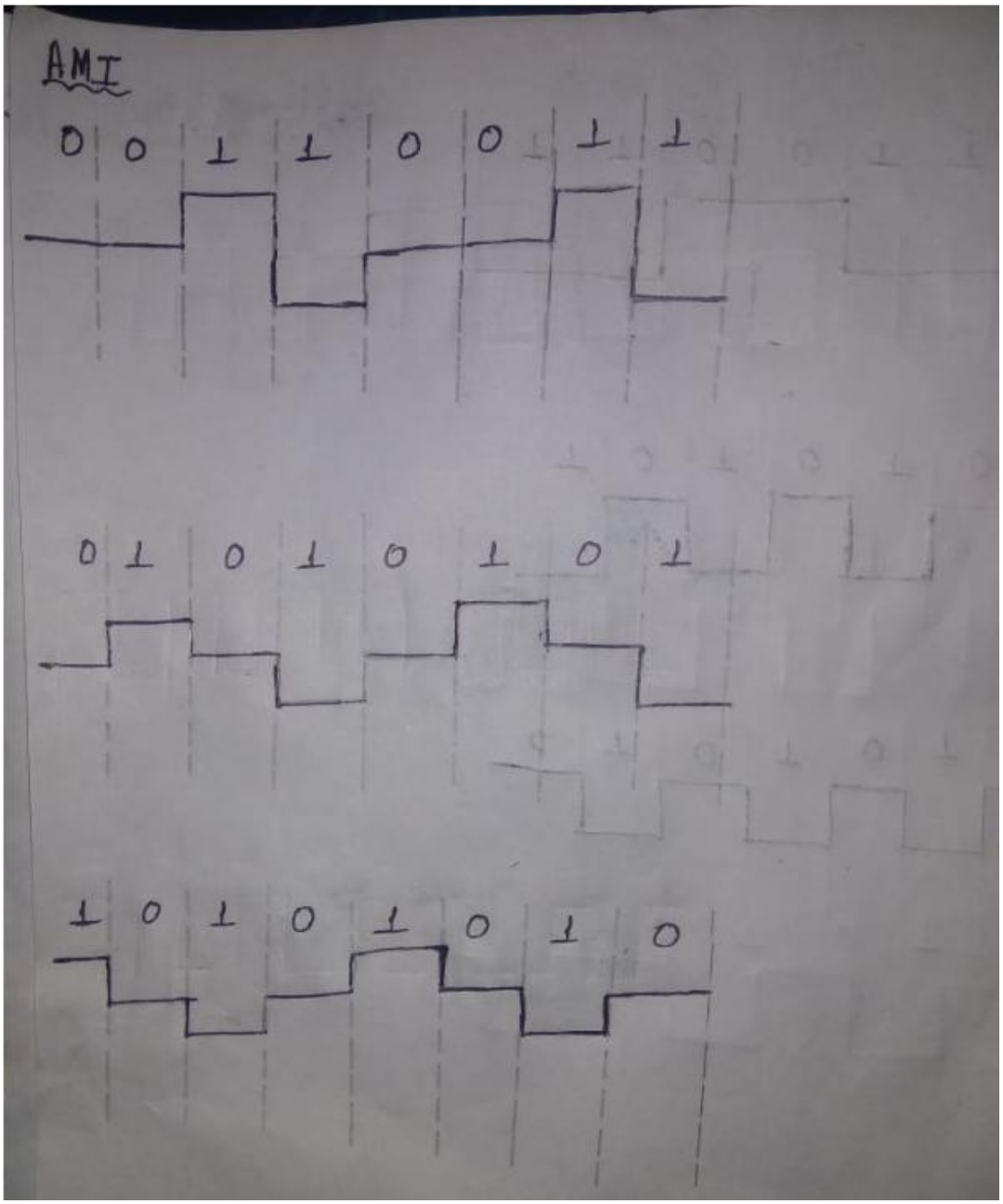
Manchester graph:



Differential Manchester graph:



AMI scheme (Alternate Mark Inversion) graph:



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: There are many Wireless networks issues and challenges. The one that we should give priority to is security. Security is the most important thing to consider when we are thinking about issues and challenges on a network, specially if they are wireless connections. Wireless connections are a lot more sensitive since all the information can be intercepted by anyone with a computer and some skills.

The first thing we should do is allow only connections with a SSL or TLS encryptions. This will allow all the data in transport to be encrypted and therefore out of the hands of hackers. We should also think about who can join the wireless network and divide the network for each organization and for guests. This way each organization will have access to the required resources only and guests would have access to basic requests only, for example an internet connection.
Finally we should use safe passwords and safe connection protocols for joining the network, as of now it is recommended WPA2 which is the safest and compatible with most devices.

Depending on the size of the organization we would probably have to consider the number of clients each router can manage and to have a network infrastructure that can be easily escalated up and escalated out.

For the future it's important to think about how many devices will be connected to the network as IoT is becoming more popular and people have more devices than ever when connecting to a network. Having a Wi-Fi 6 capable network will allow to allocate for IP addresses and serve more clients with a smaller infrastructure.

From my point of view i could figure out some of the point that raised on both current as well as future wireless network issues are:

1) Speed
now a day we are using 5G technology and as we are watching that more no of new devices will be entered inside the wireless world we have to emphasize the network bandwidth and speed through high directionality that will improve the spectrum use of signals between devices.

2) Auto recognition of devices

upcoming years more no of devices will come for that reason we have to built such technology that any new device can be recognized and its total strength
and various platform information device information so that network can easily identify all the aspect of that device which will enhance entire speed and routing direction based upon signal strength.

3) Concept of RFID

what could be better than this that in upcoming future when any student enter in his or her institution through RFID technology his or her presence can easily tracked wirelessly so that tracking of individual current position be possible which will be a new challenge in respect of technology optimization.

4) Software optimization and sensor compatibility

as number of devices with so many new features band signal strength it will be very hard to reach data more accurately with proper routing principle, so have to built such technique network can auto sense the path with useful information and send the packets with minimum delay and interference.