

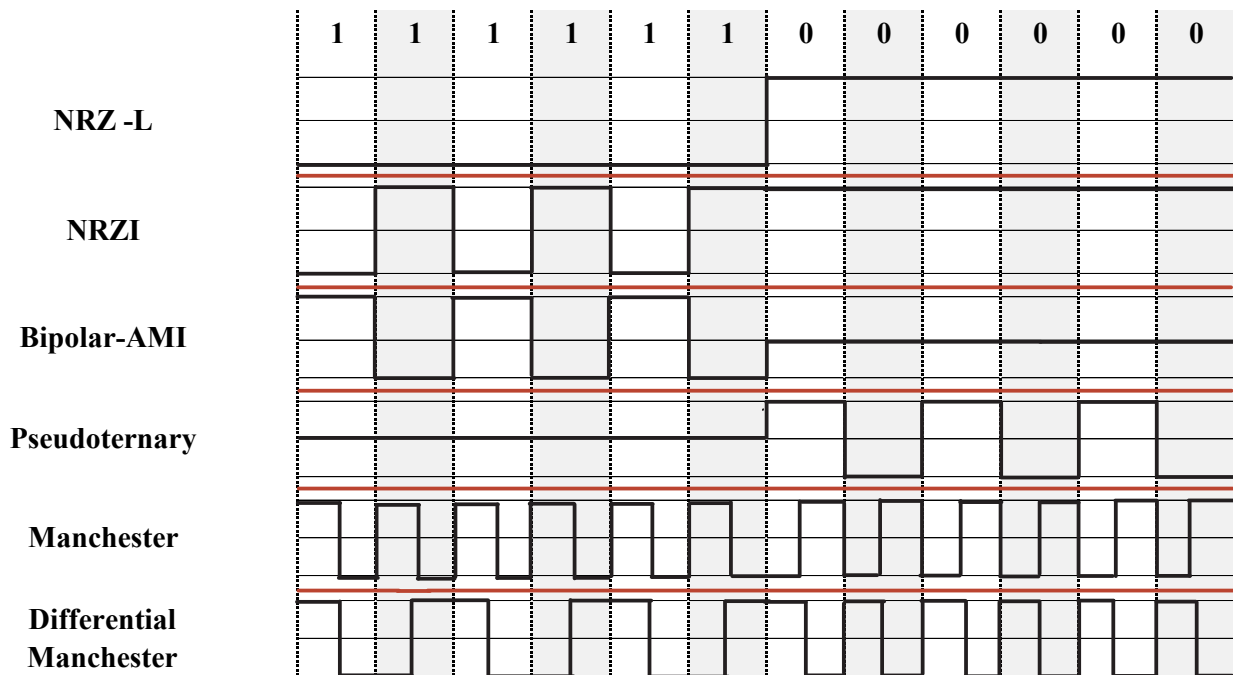
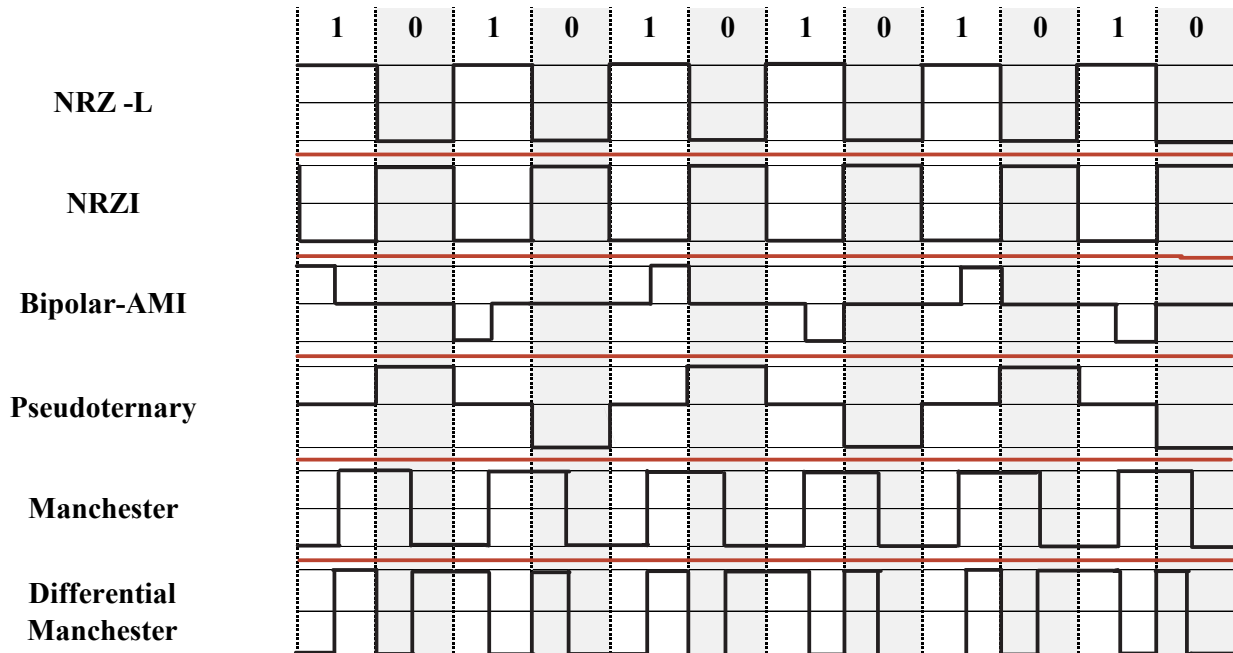
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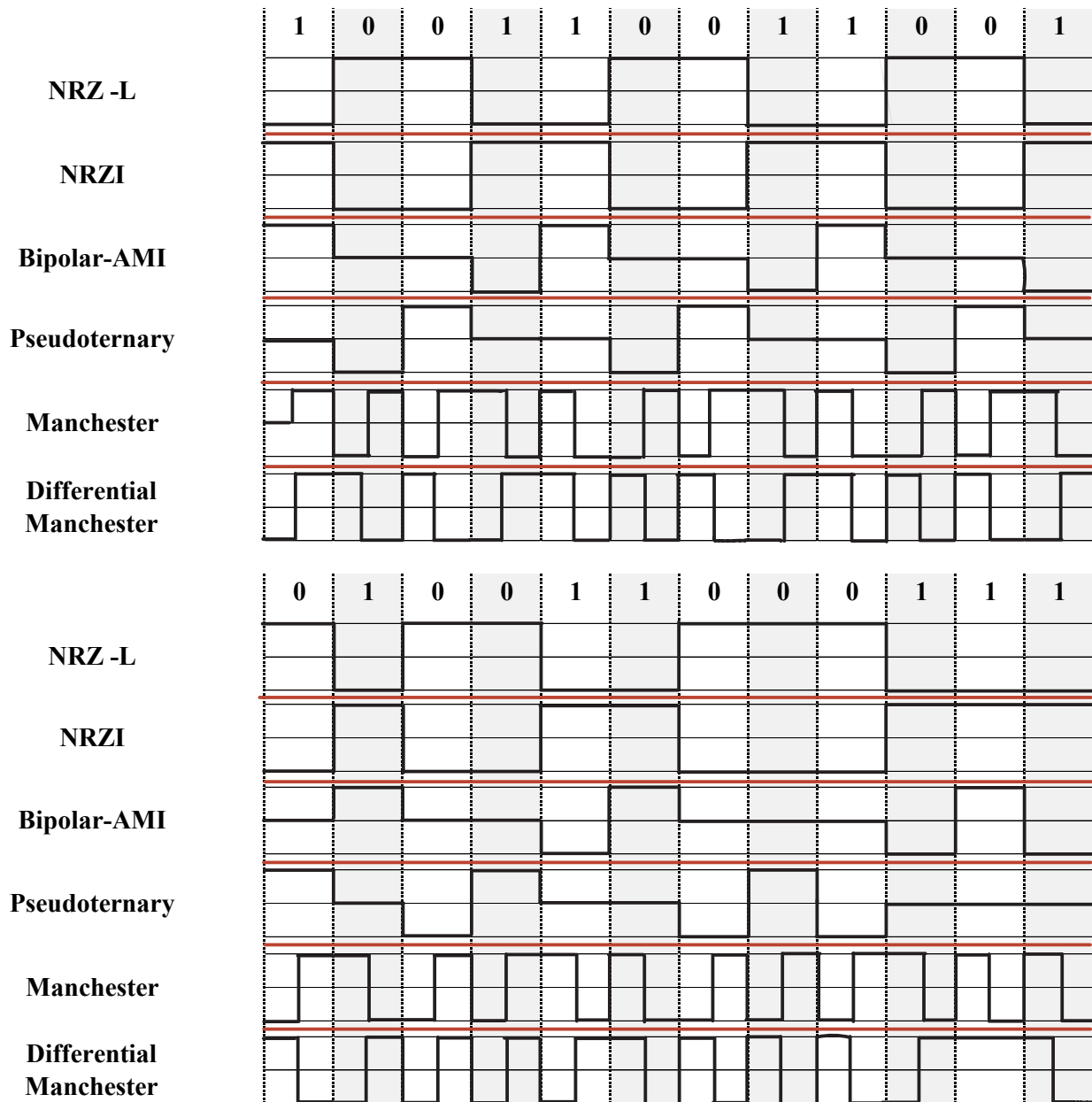
Networking & Wireless Communications

Line Coding Exercise

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Directions: Sketch the encoded digital signal for each encoding scheme discussed in class using the data provided.





Compare each scheme in terms of spectrum, clocking, error detection, and cost/complexity.

	Spectrum	Clocking	Error Detection	Cost/Complexity
NRZ -L	0 = high 1 = low	any drift in clocking results in loss of synchronization	differential encoding, more reliable	Very Simple, DC component lack of Synchronization
NRZI	0 = low 1 = high	any drift in clocking results in loss of synchronization	differential encoding, more reliable maintains constant voltage	Very Simple, DC component lack of Synchronization
Bipolar-AMI	0 = no voltage 1 = alternating low/high	No clock drift easy sync	Simple means of error detection	- No DC Component - uses less Bandwidth - requires 3 signal levels (not efficient) - more Signal Power
Pseudoternary	0 = alternating 1 = voltage	Built in clock No clock drift easy sync	Built in error detection	- No DC Component - uses less Bandwidth - requires 3 signal levels (not efficient) - more Signal Power
Manchester	0 = high to low 1 = low to high mid bit transmission	- Clock Sync because there is a new pulse every bit	error detection because there is a pulse every bit, easy to detect	- No DC Component - More Complex - more Bus - higher modulation rate
Differential Manchester	0: additional transition @ start 1: mid bit transmission	- Clock Sync because there is a new pulse every bit	error detection because there is a pulse every bit, easy to detect	- No DC Component - more Complex - more Bus - higher modulation rate