

01:10

## SIGNAL

- ★ It is a function that represents the variation of a physical quantity with respect to time.
- ★ Example: Variation in temperature of a city in one day i.e. 24 hours.
- ★ Analog Signal and Digital Signal.

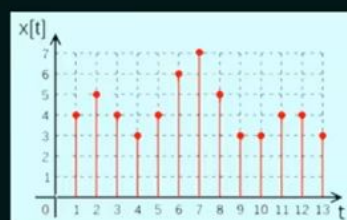
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## DIGITAL SIGNAL

- ★ It is the signal that can take on of the finite values at any given time.
- ★ In case of digital signals, we discretize both time and magnitude.



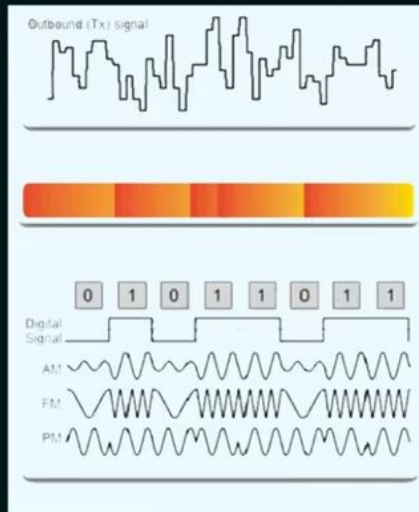
The signal  $x[t]$  can only take one value out of 0, 1, 2, 3, 4, 5, 6, and 7 for any discrete value of time.

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## PHYSICAL LAYER MEDIA

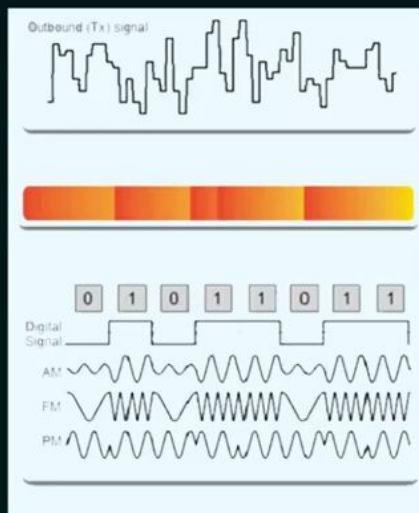


Electrical Signals  
Copper cable

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## PHYSICAL LAYER MEDIA



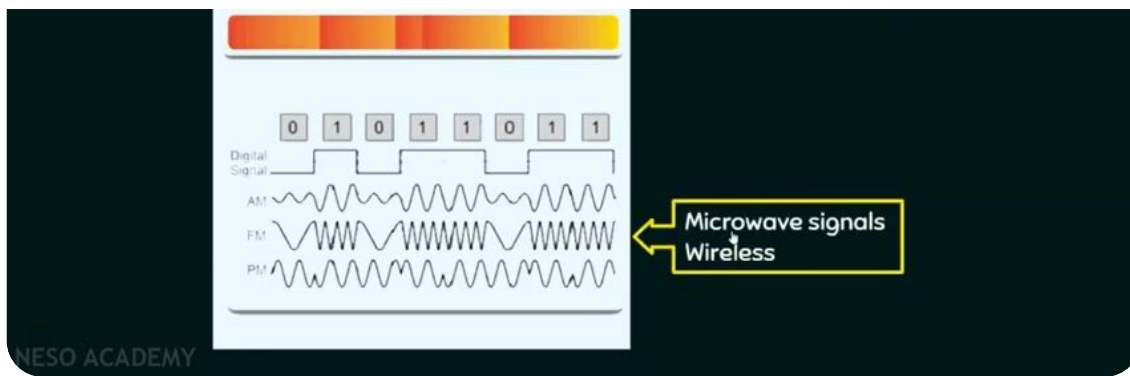
Light pulses  
Fibre Optic cable

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## PHYSICAL LAYER MEDIA





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## COMPARISON OF VARIOUS PHYSICAL MEDIA

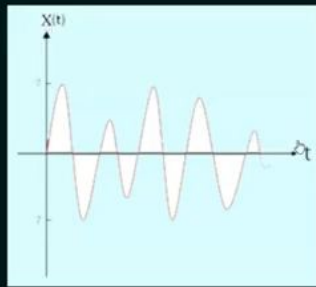
Media	Physical Components	Signal
Copper Cable (Wired)	<ul style="list-style-type: none"> <li>•UTP/STP</li> <li>•Coaxial</li> <li>•Connectors</li> <li>•NICs</li> <li>•Ports/Interfaces</li> </ul>	Electromagnetic Signal
Fiber Optic Cable (Wired)	<ul style="list-style-type: none"> <li>•Single-mode Fiber</li> <li>•Multimode Fiber</li> <li>•Connectors</li> <li>•NICs and Interfaces</li> <li>•Lasers and LEDs</li> </ul>	<ul style="list-style-type: none"> <li>•A light pulse equals 1.</li> <li>•No light pulse is 0.</li> </ul>
Wireless Media	<ul style="list-style-type: none"> <li>•Access Points</li> <li>•NICs</li> <li>•Radio</li> <li>•Antennae</li> </ul>	•Radio waves

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## ANALOG SIGNAL

- ★ It is the signal that can take any value in the defined range.

★ All real-life signals are analog in nature.



The signal  $x(t)$  can take any value between  $-7$  to  $+7$ .