

For BSc (III Sem) Physics

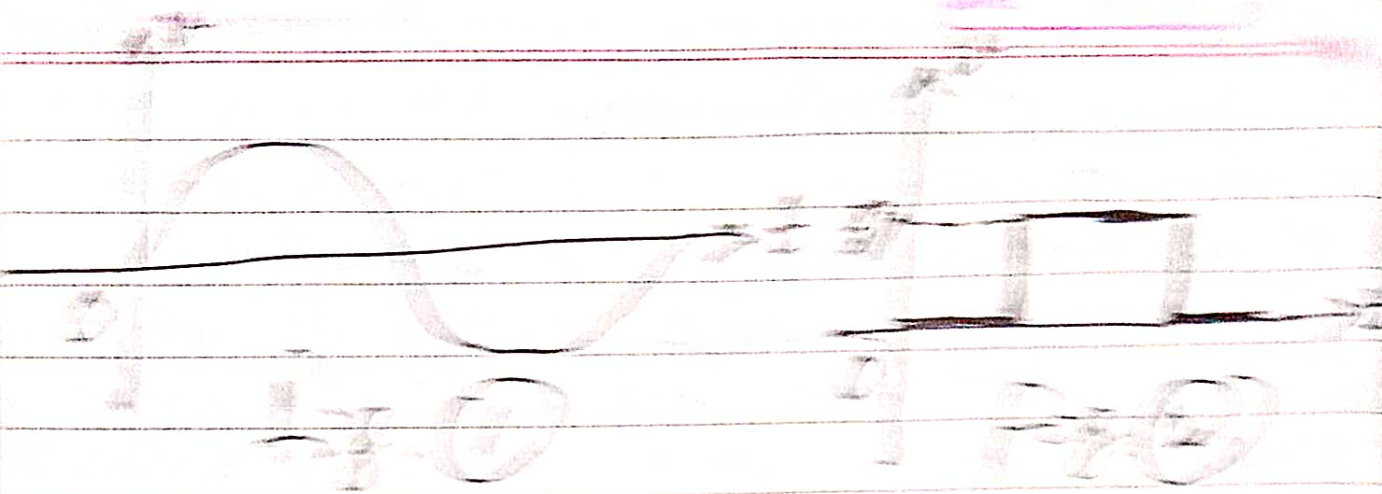
# Digital Electronics

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A continuously varying signal (voltage or current) is called an analog signal. For example, a sinusoidal voltage is an analog signal. In an analog electronic circuit, the output voltage changes continuously according to the input voltage variations. In other words, the output voltage can have an infinite number of values. A signal (voltage or current) which can have only two discrete values is called a digital signal. For example, a square wave is a digital signal. The semiconductor devices (e.g. diodes, transistors etc.) can be designed for two state operation viz., saturation and cut off. In that case, the output voltage can have only two states (i.e., values), either low or high. An electronic circuit that is designed for two-state operation is called a digital circuit.

The branch of electronics which deals with digital circuits is called digital electronics.

# Binary and Digital Signal



Binary Signal = 1 continuously  
Binary signal (change in voltage) is called - in digital signal. For example, an alternating voltage waveform continuously in an analog signal. In a digital signal, the voltage level is related to the subject of a number. In digital signal, the voltage level will also vary. In digital signal, the voltage level is the analog, therefore, the voltage level can have an infinite number of values. Due to many a reason, but the analog, therefore, it is called a digital signal. In digital signal, the voltage level is related to the subject of a number. In digital signal, the voltage level will also vary. In digital signal, the voltage level is the analog, therefore, the voltage level can have an infinite number of values. Due to many a reason, but the analog, therefore, it is called a digital signal.

+5V and 0V and no other value. These values are labelled as High and Low. The High voltage is +5V and the low voltage is 0V. If proper digital signal is applied to the input of a transistor, the transistor can be driven between cut off and saturation. In other words, the transistor will have two state operations, i.e., output is either low or high. Digital operations has only two states i.e., ON and OFF.

# Digital Circuit: An electronic

circuit that handles only a digital signal is called a digital circuit.

The output voltage of a digital circuit is either low or high and no other value. In other words, digital operation is a two-state operation. These states are expressed as (High or Low) or (ON or OFF) or (1 or 0). Therefore, a digital circuit is the one that expresses the values in digits 1's or 0's, hence the name digital. The numbering concept that uses only the two digits 1 and 0 is the binary numbering system.