**Definitions**

**Digitization is the process of conversion of signals(analog) into bits(digital). The steps of digitization of voice and video (time-varying analog signal v(t)) are the Sampling and Quantization.**

**Sampling is the periodic measurement of the signal every T second. These periodic measurements are called samples.**

**Quantization is the approximation of the possible values of the samples by a finite set of values. Each sample is then replaced by a binary numbers i.e. by a bit stream.**

**Band-Width (B.W.) is the difference between the upper and lower frequencies in a continuous band of frequencies. It is typically measured in**[**hertz**](https://en.wikipedia.org/wiki/Hertz)**,**

**Bandwidth (B.W.) is the maximum rate of data transfer across a given path.**

**The Nyquist theorem states that an analog signal waveform can be converted to digital format and be reconstructed without error from samples taken at equal time intervals if the sampling rate is equal to, or greater than, twice the highest frequency component in the analog signal.**

**Nyquist theorem state that the Sampling rate is equal to or greater than twice the maximum frequency or twice the bandwidth of the signal.**

**S≥ 2\*B.W**

**A bitmap (or**[**raster graphic**](https://techterms.com/definition/rastergraphic)**) is a**[**digital**](https://techterms.com/definition/digital)**image composed of a**[**matrix**](https://techterms.com/definition/matrix)**of dots. When viewed at 100%, each dot corresponds to an individual**[**pixel**](https://techterms.com/definition/pixel)**on a display. In a standard bitmap image, each dot can be assigned a different color. Together, these dots can be used to represent any type of rectangular picture.**

**Vector image is away to represent the image by storing information as mathematical instructions rather than as individual pixels.**