

Distinguish, differentiate, compare and explain what is the difference Between Sampling and Quantization. Comparison and Differences.

## **Difference Between Sampling and Quantization**

In order to create an image which is digital, we need to covert continuous data into digital form. There are two steps in which it is done, Sampling and Quantization.

1. The basic difference between these two processes is which axis or variable is discrete and which is continuous. In sampling, the values on the y-axis, usually amplitude, are continuous but the time or x-axis is discretized. In quantization, time is continuous and the y-axis or amplitude is discretized.
2. In sampling, one value of the amplitude is selected from different values of time to represent it. In the case of quantization, different values of time are rounded off to get a defined set of possible values of amplitude. Furthermore, sampling is always done before carrying out the quantization process.
3. The sampling rate determines the spatial resolution of the digitized image. The quantization level determines the number of grey levels in the digitized image.
4. Sampling reduces a continuous curve (Time-Amplitude graph) to a series of "tent poles" over time. Quantization, on the other hand, reduces a continuous curve to a continuous series of "stair steps" that exist at regular time intervals.
5. Sampling is done prior to the quantization process.