e. DISCUSS THREE CHALLENGES PRESENT IN ANALOG MEDIA THAT WOULD CALL FOR DIGITIZATION OF AUDIO SIGNALS TO SOLVE

* Analog signals are prone to generation loss

This is the loss of quality between subsequent copies or transcodes of data. In analog signals, generation loss is mostly due to noise and bandwidth issues in cables, amplifiers, mixers etc. One way of minimizing the number of generations needed was to use an audio mixing or video editing suite capable of mixing a large number of channels at once.

* Analog signals are subject to noise and distortion, as opposed to digital signals which have much immunity

Both digital and analog systems are subject to noise and distortion. The difference is that you don’t listen to or view a digital signal. You have to convert it to analog. A digital signal only has to accurately convey tow levels. As long as the distortion and noise do not prevent reading these tow levels, it can ve converted to analog without any errors. With no errors, it is possible to recover the original analog signal without added noise or distortion.

In analog system, any added noise becomes part of the signal. Any distortion becomes part of the signal. There really is no way to separate them.

* Analog signals are generally lower quality signals that digital signals

Digital recordings can be played and copied endlessly without ever losing their original quality. Over time, vinyl records and tapes can lose their audible value when being played or copied.

An analog audio bandwidth is considered unlimited. Therefore, it can move to a higher and higher resolution therefore loosing its quality.