



# ! "Test for Quick Audio Men" English Answers 02

Write down quickly a numerical value or a slogan.

UdK Berlin  
Sengpiel

10.96  
F + A

1. Which dynamic gain can be achieved with a 20 bit digital hard disk recording in contrast to a conventional 16-bit DAT recording? More than 20 bits are practically not possible. 24 bits are really not the "truth".

These are **4 bits**, each has 6 dB dynamic gain.  $4 \times 6 \text{ dB} = \mathbf{24 \text{ dB}}$  more.

1 foot = 12 inch =  $12 \times 2.54 \text{ cm} = \mathbf{30.48 \text{ cm}}$ .

2. At what frequency in natural hearing in the median plane is the Blauert's direction-determining "above" band? In spectra with a narrow range of frequencies around **8 kHz**, the direction "up" is localized in the median plane.

3. Which wavelength  $\lambda$  in air at  $20^\circ\text{C}$  has a tone of the frequency  $f = 1 \text{ kHz}$ ?

$\lambda = c / f = 343 / 1000 = 0.343 \text{ m} = \mathbf{34.3 \text{ cm}}$ . (The speed of sound at  $20^\circ\text{C}$  is  $c = 343 \text{ m / s}$ )

4. A sound engineer must be able to understand the dimensions of an American colleague. How many centimeters are one 'foot'? Calculate this from an inch

1 foot =  $12 \times 2.54 \text{ cm} = \mathbf{30.48 \text{ cm}}$ . 1 foot is 12 inch. 1 inch is 2.54 cm.

5. A vibrato frequency refers to the frequency change occurring per second. What is the frequency in Hertz, to get the most effective and most beautiful violin vibrato?

The average violin vibrato is around **7 Hz**.

6. Loudspeakers have usually an input impedance of 8 ohms. Which output resistance do have studio loudspeaker power amplifiers? (AC resistance = impedance).

The internal resistance of a studio Lautprecherverstärkers is less than **0.1  $\Omega$ !** (That is never as high as 8 ohms).

7. How do we call the musical technical term for a choir without instrumental accompaniment?

**A-cappella** choir. Note the double-p-notation, which dates from the time of Gregorian chant. (Cappella sistina). At least the sound people should be able to write properly.

8. At which pitch (frequency  $f$ ) our hearing is the most sensitive?

At the frequency  $f = \mathbf{3.6 \text{ kHz}}$  our hearing is most sensitive.

9. What is the rear attenuation in dB at 1 kHz of a "wide cardioid" microphone pattern (KM 143 and MK 21)?

In the wide cardioid microphone, the rear attenuation is approximately **11.7 dB** (Sound incidence direction of  $180^\circ$ ).

10. At what frequency we find the main formant of the sung vowel "A"?

The region of the main formant of the A vowel is around **1 kHz**.

11. What is the output resistance (nominal impedance) of the microphones of the KM 100-series from Neumann?

All the microphones KM 100-series have an internal resistance of **50 ohms**. (Not 200 ohms).

12. What percentage of sound takes a hypercardioid microphone compared to a microphone with the characteristics of a sphere (omni directional microphone)?

The hypercardioid takes **only 25%**, that is 1/4 of the sound (energy) that takes an omni-directional microphone.

13. Using the 48 V phantom power (DIN 45596), the voltage is given across two resistors on the two "modulation lines". What are the values of these resistors?

Each resistor is **6,8 k $\Omega$** .

14. A music was recorded with a NAB standard 38 cm/s tape recorder. When listened with a IEC = DIN = CCIR tape recorder the level has to be corrected with an EQ of the mixer at 60 Hz and 10 kHz? Which level correction is needed?

The lower frequencies must be **damped by 2.5 dB at 60 Hz** and the high frequencies must be **lifted by 2.5 dB at 10 kHz**.

15. What is the effective diameter of a "small diaphragm microphone" (condenser microphone)?

The effective diameter of the microphone diaphragm in miniature microphones around 20 mm (18 ... 21 mm).