MICROPHONES

A microphone is an example of a transducer, a device that changes information from one form to another. Sound information exists as patterns of air pressure; the microphone changes this information into patterns of electric current. There are two main types of microphones.

1) Condenser Microphones

A battery in condenser microphone is connected to both pieces of metal, which produces an electrical potential, or charge, between them. The amount of charge is determined by the voltage of the battery, the area of the diaphragm and backplate, and the distance between the two. This distance changes as the diaphragm moves in response to sound. When the distance changes, current flows in the wire as the battery maintains the correct charge. The amount of current is essentially proportional to the displacement of the diaphragm, and is so small that it must be electrically amplified before it leaves the microphone.

Condenser microphones are the most common types of microphones you'll find in studios. They have a great frequency response which is the ability to reproduce the "speed" of an instrument or voice.

Condenser microphones are generally much more expensive than dynamic microphones. Condenser microphones are generally used only in studios because of their sensitivity to loud sounds and the fact that they’re quite a bit more fragile than their dynamic counterparts. That being said, you’ll find them onstage at live music venues for use as drum overheads or for use in orchestral or choral sound reinforcement.

2) Dynamic Microphones
Sound waves cause movement of a thin metallic diaphragm and an attached coil of wire. A magnet produces a magnetic field which surrounds the coil, and motion of the coil within this field causes current to flow. It is important to remember that current is produced by the motion of the diaphragm, and that the amount of current is determined by the speed of that motion.

Compared to condenser microphones, dynamic microphones are much more rugged. They’re also especially resistant to moisture and other forms of abuse, which makes them the perfect choice onstage. Any good rock club probably has at least 5 of each of these microphones in various states of aesthetic ruin. Dynamic microphones don't require their own power supply like condenser microphones. Their sound quality is generally not as accurate. However, most dynamic microphones have a limited frequency response, which makes them well-suited, along with their ability to withstand high sound pressure levels, for loud guitar amps, live vocals, and drums.

Exercise:

Decide if the statement is true or false. In case the statement is false, correct it.

a) Microphone changes sound information into patterns of electric current.
b) Dynamic microphones are generally much more expensive than condenser microphones.
c) Dynamic microphones are much more fragile.
d) Condenser microphones are use in orchestral or choral sound reinforcement.
e) Condenser microphones have ability to withstand high sound pressure levels.
f) A microphone is an example of a transducer, a device that does not change the information from one form to another.
g) Any good rock club probably has at least 5 of each of condenser microphones.
h) Dynamic microphone has got a battery.
i) In dynamic microphones the current is produced by the motion of the diaphragm.
j) A battery in a condenser microphone is connected to both pieces of metal.
TYPES OF MICROPHONES

Large Diaphragm Microphones (LDMs) are generally the choice for studio vocals, and any instrument recording where a more "deep" sound is desired.

Small Diaphragm Microphones (SDMs) are generally the best choice where you want a solid, wide frequency response and the best transient response, which as we mentioned before, is the ability for your microphone to reproduce fast sounds, such as stringed instruments. SDMs are also the preferred choice for concert.

Shotgun Microphone are great for pinpointing the exact audio you want without the problem of audio interference from surrounding ambient noise. The mic can be manually held using a boom pole or attached to a boom stand.

Handheld microphones are typically what you see local TV reporters using. They are useful for “run and gun” type of situations.

Lapel Microphones are tiny little mics, also referred to as lavalier microphones that clip to someone’s shirt or tie and are usually used in a sit-down interview situation. These are great for capturing consistent audio levels as the microphone does not move around like a handheld mic. (Helpful Hint: always tuck away wires and cables for a more professional look.)
Exercise:

Finish the sentence with the correct type of microphone...

a) The right choice for studio vocals is ...........................................microphone.

b) In a sit-down interview situation is the..........................microphones usually use.

c) SDMs is short form for.........................microphones.

d) Useful microphones for “run and gun” type of situations are ..................microphone.

e) The preferred choice for concert is ....................microphone.

f) The .........................microphone can be clip to someone’s shirt or tie.

g) The.........................microphones can be manually held using a boom pole.
Try to choose the correct type of microphone by reading the text: Uni-directional, Omni-directional, Cardioid

This is a great all-purpose microphone, gathering a wide range of sounds from all directions. For example, this kind of mic is great for picking up all voices in a group discussion. Camcorders typically operate with an internal omnidirectional mic. For good quality sound, the mic must be held close to its subject.

So named because the pick-up pattern of the audio is somewhat heart-shaped. The mic picks up sound mostly from the front and sides of the microphone and also a bit from behind. Handheld microphones used for gathering news usually have this audio pattern for the widest possible usage.

Used in shotgun mics, this audio pattern is great for focusing in on a specific sound and blocking out ambient noise. For example, this is a great mic if you want to pick up the voice of just one person in a group discussion or one actor in a scene. (This mic is not for long distant sound as some people think) Unidirectional mics are highly directional and must be pointed directly at the subject to capture the best sound quality. No dozing if you’re the boom mic operator.
Speaking:

1) What is a microphone and what are they used for?
2) Do you any manufactures of microphones?
3) What are the main types of microphones?
4) Have you ever used a microphone? In which occasion?
5) Do you have a favourite microphone?
6) Do you think that microphones are important in our lives?
7) Where are the microphones usually used? In which area? (Media, music, speakers, etc....)