b. No electric or magnetic fields extend outside of the……. conductor in a coaxial line.
c. A ground bus is a bus to which the ……. from individual pieces of equipment are connected, and that, in turn, is connected to ground at one or more points.
d. A ground cable band is used for ……. the armor or sheaths of cables or both.

4. Space

a. Space charge is the electric charge in a region of ……. , due to the presence of electrons and/or ions.
b. The direct ……. wave is basically limited to so-called line-of-sight transmission distances.
c. A …….shaft is a separate shaft connecting the shaft ends of two machines.
d. A …….pulse or space is the signal pulse that, in direct-current neutral operation, corresponds to a circuit open, or no current condition**.**

5. Break

a. The length of a multiple …….is the sum of two or more breaks.
b. A motor develops the breakaway torque to……. away its load from rest to rotation.
c. Breaking capacity is the current that the device is capable of ……. at a stated recovery voltage under prescribed conditions of use and behavior.

C. Fill in the blanks with the following words.

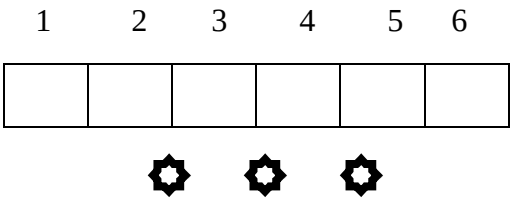
Characteristic	operating	line
frequency	below	be

The impedance of the cable, termed the …….or **surge impedance** $Z_{0,}$ is considered to…….,independent of the cable length and the……. Frequency. This consideration is valid when the…….. is properly terminated and when the operating……. is above a few tens of kilohertz, but…… a few gigahertz

D. Put the following sentences in the right order to form paragraph. Write the corresponding letters in the boxes provided.

a. A quantitative indication of the nature of a particular standing wave is given by the *standing-wave ratio* (SWR).

b. When voltage and current waves are reflected on a line due to a discontinuity, standing waves are produced.
c. It is of the nature of this pattern that there are points of maximum and minimum values.
d. Standing waves are the result of the summing of instantaneous values of incident and reflected waves at every point along a line.
e. The standing-wave ratio is defined as the ratio of the maximum value of a wave to its minimum value.
f. The summing process produces a pattern of variation (the standing wave) along the line.



Section Two: Further Reading

Antennas

A source has no way of knowing whether a line is infinite or finite when it begins to supply current and voltage waves to the line. If the line is terminated (connected to a load) in a resistance whose value is equal to Z_0, the voltage and current waves will 'enter' that resistance and be dissipated. The energy that the waves represent will be taken off the line by the terminating device (the resistance); none of the energy will be returned to the line.

On the other hand, if the line is simply an open line of finite length, something must happen to the waves when they reach the end of the line. Since there is nothing connected to the line to absorb them, they will be reflected back from the end of the line and will travel along the line toward the source. On the line there will now be voltage and current waves coming from the source, and voltage and current waves traveling back from the-end of the line. The waves from the source are called *incident waves,* those reflected from the end are called *reflected waves.* As with any ac voltage or current, the two sets of waves will combine phasorally at each point along the line-the incident voltage wave with the reflected voltage wave, incident current wave