Acid, Base, Waves Test – Multiple Choice [3 pts each]

♪

1. How do radio waves and visible light waves differ?
   1. Radio waves have a shorter wavelength than visible light waves.
   2. Radio waves move faster than visible light waves.
   3. Radio waves have a lower frequency than visible light waves.
   4. Radio waves have more energy than visible light waves.
2. Which is true of infrared waves?
   1. They have shorter wavelengths than X-rays.
   2. They give off more energy than gamma rays.
   3. They have longer wavelengths than ultraviolet waves.
   4. They have higher frequencies than visible light waves.
3. When comparing the types of electromagnetic waves, which has the greatest energy?
   1. Visible
   2. X-rays
   3. Gamma rays
   4. Ultraviolet
4. What is the speed of a wave with a wavelength of 0.5 m and a frequency of 20 Hz?
   1. 5 m/s
   2. 10 m/s
   3. 20 m/s
   4. 30 m/s
5. A student is listening to the radio and realizes that the volume is too low. When she turns up the volume, which part of the sound waves is she changing?
   1. Frequency
   2. Period
   3. Amplitude
   4. Wavelength
6. In an experiment, a researcher collected the following information about a solution made from a certain food:

• pH = 3

• Taste = sour

• Reactivity = reacts with metals

Based on the information, what best describes this solution?

* 1. Salt
  2. Base
  3. Neutral
  4. Acid

1. What type of wave has disturbance perpendicular to the direction it is moving?
   1. Sound
   2. Surface
   3. Transverse
   4. Longitudinal
2. This is measured in Hertz (Hz)
   1. Speed
   2. Frequency
   3. Amplitude
   4. Sound
3. True or false: Vectors have speed and direction
   1. True
   2. False
4. You are speaking to your friend under water, come up, take a breath, and say another sentence. What is the medium your sound waves are traveling through the second time?
   1. Waves
   2. Bubbles
   3. Water
   4. Air
5. Sound waves are what type of waves?
   1. Transverse
   2. Surface
   3. Longitudinal
   4. Mechanical
6. What two properties do electromagnetic waves have?
   1. Medium and Amplitude
   2. Amplitude and Electricity
   3. Electricity and Magnetism
   4. Wavelength and Sound
7. What from the following list would turn blue litmus paper red (choose only one)?
   1. Chalk
   2. Orange Juice
   3. Soap
   4. Garlic
8. This is another word for base
   1. Salt
   2. Alkaline
   3. Buffer
   4. Acetic
9. What from the following list would donate OH- ions (choose ALL that apply)?
   1. Cleaner
   2. Orange Juice
   3. Chalk
   4. Cleaner
10. When you add chemicals to the pool to help resist changes in pH and keep a steady balance, you are creating a…
    1. Base
    2. Acid
    3. Salt
    4. Buffer
11. This forms when you combine positive ions of an acid with negative ions of a base
    1. Base
    2. Buffer
    3. Salt
    4. Acid
12. A dolphin can typically hear sounds with frequencies up to 130 kHz. What is the speed of sound in water if a wave with this frequency has a wavelength of 3.0 cm?
    1. 1500 m/s
    2. 3900 m/s
    3. 43.33 m/s
    4. 390 m/s
13. If a wave’s wavelength increases then…
    1. The amplitude will decrease
    2. The frequency will increase
    3. The frequency will decrease
    4. It will change speed
14. Faster vibrations will have…. (think about strings on a guitar)
    1. Higher sounds
    2. Lower sounds
    3. Higher wavelength
    4. Lower frequency
15. True or false: Pitch has nothing to do with your age or health
    1. True
    2. False
16. According to the Doppler Effect, an object will have a red color shift as it moves in which direction
    1. Away from you
    2. Towards you
    3. South
    4. North
17. Two magnets are laid on a table with their north ends facing each other. What property will be displayed?
    1. Current
    2. Repulsion
    3. Resistance
    4. Attraction
18. On the pH scale, what pH would be neutral

A. 1 B. 5 C. 7 D. 14

25. Which is not true of a base.

A. highly reactive with metals B. corrosive

C. slippery D. bitter taste

26. The height of a wave above its rest position is called its

A. wave height B. wave length C. amplitude D. Frequency

27. If a type of candy was sour, its pH would probably be

A. 7 B. lower than 7 C. higher than 7 D. candy doesn’t have a pH

28. What type of wave can travel through the vacuum of space?

A. sound B. electromagnetic C. mechanical D. none of these

29. H2SO4 is the formula for

A. hydrochloric acid B. hydrogen sulfide C. sodium hydroxide D. sulfuric acid

30. Bases produce what type of ions in water

A. hydrogen B. hydronium C. hydroxide D. oxygen