Physics Science Questions for CDS, CGL Tier-1, Railways and SSC 10+2 Exams

Physics Quiz 15

Directions: Study the following question carefully and choose the right answer.

1. What is the relationship between the rate of emission of photo electrons and intensity of incident light in photoelectric effect?

A. Directly proportional
B. Inversely proportional
C. Rate of emission is inversely proportional to the square of intensity of incident light
D. Rate of emission is directly proportional to the square of the intensity of incident light

2. Which of the following is not true about electromagnetic waves?

A. These waves are produced by accelerating charged particles
B. Electric and magnetic fields in electromagnetic waves are perpendicular to each other
C. The change in electric and magnetic field is not sinusoidal but random
D. These waves do not require any medium to propagate

3. A solid can undergo three types of expansions. Which of the following is not one of them?

A. Linear expansion B. Superficial expansion C. Cubical expansion
D. Spherical expansion

4. Relative humidity _____ with increase of temperature

A. Increases B. Decreases C. Remains same D. Might increase or decrease

5. The instrument used for measuring relative humidity is?

A. Hygrometer B. Barometer C. Seismoscope D. Anemometers

6. If impurities are highly soluble in liquid, what happens to the surface tension?

A. Increases B. Decreases C. Remains same D. Might increase or decrease

7. Which of the following is not true about viscosity?

A. Viscosity of a liquid decreases with increase in temperature
B. Viscosity of gases increases with increase in temperature
C. Viscosity is measured by coefficient of viscosity
D. Viscosity is shown by liquids, solids and gases

8. Which of the following waves has the lowest frequency?

A. Infra red waves B. X rays C. Uv rays D. Long radio waves

9. The speed of sound is found to be maximum in which of the following media?

A. Solid B. Liquid C. Gas D. Super cooled liquid

10. Which of the following is not true about the value g i.e the gravitation constant.

A. Value of g depends on the shape of the earth
B. The value of g is zero at the center of the earth
C. The value of g decreases with increase in height
D. The value of g increases with depth

Correct Answers:

1	2	3	4	5	6	7	8	9	10
A	C	D	A	A	A	D	D	A	D

***Explanations*:**

1.

The emission of electrons from the surface of a metal is called photoelectric effect. It was discovered by Einstein for which he received Nobel prize.

When a ray of light is incident on the surface of a metal, electrons are ejected out of the surface. The rate of emission is directly proportional to the intensity of incident light. Therefore, as the intensity increases, the number of electrons ejecting out of the surface will also increase.

Hence, option A is correct.

2.

Electromagnetic waves consist of electric and magnetic waves which change sinusoidally and are perpendicular to each other and the direction of propagation of the wave. These waves do not require any medium to travel and thus are able to travel in vacuum.

All other options are correct except option C.

Hence, option C is correct.

3.

Thermal expansion means "increase in size on heating". Various substances expand (increase in size) when their temperature is raised and contract(decrease in size) when their temperature is lowered.

For example, when a metal block is heated, it generally expands in length,breadth and height. This indicates that the metal block expands in volume and is called as **volume expansion or cubical expansion**. However, if we heat a solid, which is in

the form of a sheet (its thickness can be neglected as compared to its surface area), then the increase in area is called **superficial expansion**. Similarly, if we heat a solid, which is in form of awire (its cross–section area is too small compared to its length and hencecan be neglected), then the increase in length is called **linear expansion**.

Hence, option D is correct.

4.

The amount of water vapour present in air expressed as a percentage of the amount needed for saturation at the same temperature is known as relative humidity. Relative humidity depends on temperature and the pressure of the system of interest.

Hence, option A is correct.

5.

The amount of water vapour present in air expressed as a percentage of the amount needed for saturation at the same temperature is known as relative humidity. Relative humidity depends on temperature and the pressure of the system of interest.

The instrument used for measuring relative humidity is hygrometer. Barometer is used for measuring the atmospheric pressure. Seismoscope is used for measuring the intensity of earthquake. Anemometers are used for measuring the rainfall.

Hence, option A is correct.

6.

The tension of the surface film of a liquid caused by the attraction of the particles in the surface layer by the bulk of the liquid, which tends to minimize surface area is known as surface tension. Mathematically, it is represented as F/L where F is the force and L is the length of the surface measured perpendicular to the application of force. Its SI uit is newton. Metre.

If impurities are highly soluble, the surface tension increases. If impurities are less soluble, the surface tension decreases.

Hence, option A is correct.

7.

Viscosity is a quantity expressing the magnitude of internal friction in a fluid, as measured by the force per unit area resisting uniform flow. Viscosity is shown by liquids and gases only.

Hence, option D is correct.

8.

Long radio waves has the least frequency or the highest wavelength as frequency is inversely proportional to the wavelength.

Following is the order of the frequency of waves from highest to the lowest.

Gamma rays> X rays> Uv rays> visible light rays> infra red rays> microwaves> radio waves

Hence, option D is correct.

9.

The speed of sound is found to be maximum in solids because the density of solids is higher than that of liquids and gases, so sound travels faster in solids. Also, the molecules in the solid medium are closely packed together than in liquids or gases, allowing sound waves to travel more quickly through it.

Hence, option A is correct.

10.

The value of g which is approximately equal to $9.8 m/s^2$ and is known as the acceleration of gravity depends on the shape of the earth. g is maximum at the poles and minimum at the equator.

g also depends on the altitude and it decreases with increase in altitude.

g also depends on the depth and decreases with depth and is zero at the center of the earth.

Hence, option D is correct.