Physics - 12th Class Physics Chapter 8 Short Questions Preparation

Q1. Can an object move with the speed of light?

Ans 1: As an object approaches the speed of light,its masses rises abruptly.If an object tries to travel 186,000 miles per seconds,its mass become infinite and so does the energy required to move it, For this reasons ,no normal object can be travel as fast as or faster than the speed of light.

Q2. What is wave particle duality?

Ans 1: It says that light has dual nature;it travels in the form of waves but interacts with matter in the form of energy particle called as photon.e.g in interference ,reflection and polarization it show the properties of wave nature but in phenomena like pair production and compton's effect light acts as energy particle.

Q3. What are the measurement on which two observers in relative motion will always agree upon?

Ans 1: Two observe in relative motion will always agree upon

1. Force
2. Acceleration

Q4. Is it possible to create a single electron from energy?Explain

Ans 1: No it is not possible to create a single electron from energy.Creation of single electron will be against the law of conservation of charge and the law of conservation of momenteum.In pair production an electron positron pair is produces.

Q5. Define ionization potential and excitation potential.

Ans 1: Ionization potential:The potential necessary to remove an electron from the atom is called ionization potential,It is expressed in volts.

Ans 2: Excitation potential:The potential require to raise orbital electron in atom from one energy level to an other is called excitation potential.

Q6. Write at least two justification for light to behave as wave and as a particle.

Ans 1: Interference and diffraction confirms wave nature of light while photoelectric effect and compton effect confirms particle nature of light.

Q7. Define Compton effect.

Ans 1: The phenomena of increase in wavelength of x rays photon scattered by loosely bound electrons from a graphite target is called Compton Effect.

Q8. Define pair production and annihilation of matter.

Ans 1: Pair production:The change of very high energy photon into an electron,positron pair is called pair production.
Annihilation of matter:When a positron comes close to an electron,they annihilation and produce two photons in the gamma rays range.It is called annihilation of matter.

Q9. Define work function and threshold frequency.

Ans 1: The minimum amount of energy required to remove electrons from a metal surface is called work function of this metal.
The minimum frequency below which photoelectric effect can not occur from a metal surface is called threshold frequency of this metal.

Q10. State uncertainty principle.

Ans 1: The product of uncertainty in the measurement of momentum and uncertainty in the measurement of position of an electron is approximately equal to Planck's constant.
The product of uncertainty in the measurement of energy and uncertainty in the measurement of time of an electron is approximately equal to Planck's constant.
