Physics - 12th Class Physics Chapter 8 Short Questions Preparation

Q1. 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.

Q2. Will the bright light ejects more from metal surface than dimmer light of tha same colour?

Ans 1: Since intensity number of electrons.
and bright lightis more intensethan dimmer one.So bright light will ejects more electrons than dimmer light.

Q3. 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.

Q4. A satellite is orbiting around earth.Is its frame of reference inertial or non-inertial ?Justify your answer.

Ans 1: The motion of the satellite is synchronized with the earth so it is in the same frame of reference in which earth lies.Hence the frame of reference will be inertial.

Q5. What are conclusion made from the pair production?

Ans 1: Pair production is the creation of an elementary particle and its antiparticle,Pair production offers refers specifically to a photon creating an electron positron pair near a nucleus but can more generally refer to any particle antiparticle pair creation. Energy can be converted into mass according to $E=mc^2$

Q6. Define Compton effect.Write formula of Compton shift for scattering angle.

Ans 1: When X-rays are scattered by loosely bound electrons from a graphite target,the phenomena of change in wavelength is known as Compton Effect.Compton shift for scattering angle is given

$$\lambda' - \lambda = \frac{h}{m_e c}(1 - \cos\theta),$$

Q7. 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.

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. As a solid is heated and begins to glow ,why does it first of its absolute.

Ans 1: Since the red light has longest wavelength ,so it will be emitted first and solid appears red first.

Q10. What do you know by annihilation of matter?

Ans 1: When a positron comes close to an electron,they annihilate and produce two photons in the gamma rays range.It is called annihilation of matter.
