Physics - 12th Class Physics Chapter 8 Short Questions Preparation

Q1. Will higher frequency of light ejects greater number of electrons than low frequency of light?

Ans 1: No it will not,The number of ejected electrons depend upon the intensity of light.They are independently of frequency.

Q2. 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.

Q3. When does light behaves as a wave?When does light behaves as a particle?

Ans 1: Light behave as a wave when it propagates from one place to other and light behave as a particle when it interacts with matter,Light behaves as a wave in interference and diffraction,Light behaves as a particle in photoelectric and Compton effect.

Q4. What advantage of an electron microscope has over an optical microscope?

Ans 1:

- Resolving power of an electron microscope is 1000 times greater than that of optical microscope.
- Magnification of an electron microscope is also about 1000 times greater than that of optical microscope.
- 3-D image of remarkable quality can be obtained by electron.

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. Photoelectric effect give the evidence of the particle nature of light,Explain it how?

Ans 1: If light were simple a wave like phenomena ,then increasing the intensity and thereby increasing the total energy failing on the surface would be expected to eventually provide enough energy to release electron no matter what the frequency .Furthermore in the classical picture one would expect the maximum energy of the emitted electrons to depend on the intensity of light--but it does not.So this is evidence that light behaves as if it were a particle.

Q7. Differentiate between inertial and non-inertial frame of reference.

Ans 1: A coordinate system in which the law of inertia is valid is called inertial frame of reference.It is non-accelerated frame of

reference.

Ans 2: A coordinate system in which the law of inertia is not valid is called non-inertial frame of reference.It is accelerated frame of reference.

Q8. 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.

Q9. Which has the lower energy quanta,radio waves or x rays?Explain

Ans 1: Energy of quanta is given as E=hf-hc/lamda
Radio waves length has longer wavelength,Therefore radio waves has lower energy quanta.

Q10. The rest mass of photon is zero.Is its momentum also zero?

Ans 1: No,The rest mass of photon is zero.It travels in the form of small energy packets which are of equal wavelength .When it is in motion,it possesses some mass.So it which it will also have momentum.
