Physics - 12th Class Physics Chapter 8 Short Questions Preparation

Q1. If you are moving in a spaceship at very high speed relative to the earth.Would you notice difference(a)In your pulse rate(b)In the pulse rate of people on the earth?

Ans 1:

1. The pulse rate of the person inside the spaceship moving with large velociety will decrease.
2. The pulse rate of the people on the earth with respect to the person inside the spaceship with large velocity will increase.

Q2. What do you understand by work function and stopping potential?

Ans 1: The minimum amount energy required to remove an electron from the surface of a metal is called work function.
And the stopping potential is the potential difference applied to stop the electrons from being ejected from the surface when the light falls on it.

Q3. 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.

Q4. 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.

Q5. Distinguished between photoelectric effect and Compton effect.

Ans 1: The emission of electron from a metal surface when exposed to suitable frequency light is called photoelectric effect and when x rays are scattered by loosely bound electrons from graphite target the phenomena of change in wavelength is known as compton effect.

Q6. Define Stopping potential and Threshold frequency.

Ans 1: Stopping potential:The stopping potential is the potential difference applied to stop the electrons from being ejected from the surface when the light fall on it.
Threshold frequency:The minimum of frequency of incident light at which electrons are emitted from a surface is called threshold frequency.

Q7. 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.

Q8. When light shine on surface,is momentum transferred to metal surface?

Ans 1: Yes when light shine on surface,momentum is transferred to metal surface and also the energy.So metal is heated up.

Q9. 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.

Q10. 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.