

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 velocity 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. 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 annihilate and produce two photons in the gamma rays range. It is called annihilation of matter.

Q3. 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.

Q4. Differentiate between special theory of relativity and general theory of relativity.

Ans 1: The special theory of relativity treats problem involving inertial or non accelerating frame of reference.

Ans 2: The general theory of relativity treats problem involving frames of reference accelerating with respect to one another.

Q5. 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 falls on it.
Threshold frequency: The minimum of frequency of incident light at which electrons are emitted from a surface is called threshold frequency.

Q6. What are advantages of NAVSTAR navigation system?

Ans 1: NAVSTAR is used to locate the position and find the speed of an object anywhere on Earth up to an accuracy of 2 cms^{-1} .

Q7. 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 required to raise orbital electron in atom from one energy level to another is called excitation potential.

Q8. When light shines on a surface, is momentum transferred to the metal surface?

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

Q9. What are black body radiations and how can you get a black body?

Ans 1: An object that absorbs all radiations falling on it, at all wavelengths is called a black body. When a body is heated, it emits radiation; its emission is called black body radiation. A black body is a solid that has a hollow cavity within it and a small hole through which radiations can enter or escape. The inside is blackened with soot to make it as good an absorber and as a bad reflector as possible.

Q10. Photoelectric effect gives the evidence of the particle nature of light. Explain it how?

Ans 1: If light were simply a wave-like phenomenon, then increasing the intensity and thereby increasing the total energy falling on the surface would be expected to eventually provide enough energy to release electrons 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.
