

Physics - ICS Part 2 Physics Chapter 19 Short Questions Preparation

Q1. 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.

Q2. 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.
- Q3. 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.

Q4. 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.

Q5. Give two postulate of special theory of relativity.

Ans 1: Postulate of special theory of relativity are states as

- 1. The laws of physics are the same in all inertial frames.
- 2. The speed of light in free space has the same value for all observes, regardless of their state of motion.
- 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. A satellite is orbiting around earth.ls 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.

Q8. 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.

Q9. 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=mc²

Q10. The rest mass of photon is zero.ls 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.