Physics - 12th Class Physics Chapter 10 Short Questions Preparation

Q1. What are isotopes?What do they have common and what are their difference.

Ans 1: Isotopes are such nuclei of an element that have the same charge number Z but have different mass number A.It means,in the nucleus the number of protons is the same but the number of neutrons is different.

Q2. What is the function of control rods in nuclear reactor?

Ans 1: Controls rods made of Cadmium or Boron are used for the control of number of neutrons,so that of all the neutrons produced in fission ,only one neutrons produces further fission reaction.
In case of emergency or for repair purpose control rods are used to stop the chain reaction and shut down the reactor.

Q3. Protons and neutron are formed by what types of quarks?

Ans 1: Protons is formed by two up and one down quarks.Neutron is formed by two down and one up quarks.

Q4. What are thermal reactors?

Ans 1: The thermal reactors are called thermal reactors because the neutrons must be slowed down to thermal energies to produce further fission,They use natural uranium or slightly enriched uranium as fuel.

Q5. What are the relation between decay constant$\lambda$and the half-line of a radioactive element?

Ans 1: The relation between decay constant$\lambda$and the half line ($T_{1/2}$) is$\lambda T_{1/2}=0.693$

Q6. What factor make a Fusion reaction difficult to achieve?

Ans 1: A fusion reaction requires large energy and temperature ,up to million degrees centigrades,So a fusion reaction is difficult to achieve.

Q7. Define nuclear fission.

Ans 1: Such a reaction in which a heavy nucleus like that of uranium splits up into two nuclei of roughly equal size along with the emission of energy is called fission reaction.

Q8. Define absorbed dose and Gray.

Ans 1: Absorbed dose:It is defined as the amount of energy absorbed from an ionizing radiation per unit mass of the absorbing body i.e.
Absorbed dose=energy/mass
Gray: it is defined as the amount of energy equal to one joule absorbed by a body of mass 1kg i.e
gray=1 joule/1 kg

Q9. If nucleus has a life of one year,does this mean that it will be completely decayed after two years?

Ans 1: No it will not decay completely after two years.
Numbers of atom at initial stage $=N_o$
number of atoms decayed after first year $=1/2N_o$

Q10. Write name of different quarks.

Ans 1: The name of different quarks are as follows
Up,Down-Strange ,Charm,Top,Bottom
