Name of Student	Class	Subject	Board	Chapter
	10th	Physics	FB	09
Date :_____	Objective			Teacher Remarks

Section - A

Q. No.1:- Circle the correct option. Each part carries one mark.

01	Isotopes are atoms of same element with different:						
a	Atomic mass	b	Atomic number	c	Number of protons	d	Number of electrons
02	One of the isotopes of uranium is $_{92}^{238}U$. the number of neutrons in this isotope is:						
a	92	b	146	c	238	d	330
03	Which among the following radiations has more penetrating power?						
a	A beta particle	b	A gamma ray	c	An alpha particle	d	All have the same penetrating ability
04	What happens to the atomic number of an element which emits one alpha particle and a beta particle?						
a	Increases by 1	b	Stays the same	c	Decreases by 2	d	Decreases by 1
05	The half-life of a certain isotope is 1 day. What is the quantity of the isotope after 2 days?						
a	One half	b	One quarter	c	One eighth	d	None of these
06	When Uranium (92 protons) ejects a beta particle, how many protons are left in the remaining nucleus?						
a	92 protons	b	91 protons	c	90 protons	d	89 protons
07	Release of energy by the sun is due to:						
a	Nuclear fission	b	Nuclear fusion	c	Burning of gases	d	Chemical reaction
08	When a heavy nucleus splits into two lighter nuclei, the process would:						
a	Release nuclear energy	b	Absorb nuclear energy	c	Release chemical energy	d	Absorb chemical energy
09	The reason carbon-dating works is that:						
a	Plants and animals are such strong emitters of carbon-14	B	After a plant or animal dies, it stops taking in fresh carbon-14	c	There is so much non-radioactive carbon dioxide in the air	d	When a plant or an animal dies
10	Gamma rays are also called:						
a	Photons	b	Electrons	c	Protons	d	Positrons
11	Charge on alpha particle is:						
a	2e	b	3e	c	4e	d	5e
12	Radium-226 has a half-life of:						
a	1820 years	b	1920 years	c	1620 years	d	1600 years

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Section – B

Q. No.2:- Attempt any eleven parts from the following. The answer of each part should not exceed 3 to 4 lines.

i. **Who discovered atom and who discover nucleus?**
ii. **Define atomic number and atomic mass.**
iii. **What is isotopes? List isotopes of hydrogen.**
iv. **Define a nuclear transmutation ?**
v. **List some submultiples of Becquerel.**
vi. **Define the terms Penetrating power, Ionization.**
vii. **How alpha and beta particles are slowed down.**
viii. **What do you know about nuclear radiation?**
ix. **Define half-life and write formula?**
x. **Write uses of radio isotopes.**
xi. **What do you know about carbon dating?**
xii. **Define nuclear fission with example?**
xiii. **Define nuclear fusion with example?**
xiv. **What is fission fragment?**
xv. **Write uses of radioisotopes in medical treatment?**

Q. No.4:- Attempt any TWO questions. All questions carry equal marks: (2×10=20)

Q. No.1:- (a).What do you understand by half-life of a radioactive element?

(b).The half-life of ${}_{7}^{16}N$ is 7.3 s. A sample of this nuclide of nitrogen is observed for 29.2 s. calculate the fraction of the original radioactive isotope remaining after this time.

Q. No2:- (a). Describe briefly the processes of fission reaction.

(b). Carbon-14 has a half-life of 5730 years. How long will it take for the quantity of carbon-14 in a sample to drop to one-eighth of the initial quantity?

Q. No.3:- (a). Describe briefly the processes of fusion. What is the source of solar energy?

(b). Cobalt-60 is a radioactive element with half-life of 5.25 years. What fraction of the original sample will be left after 26 years?