CHAPTER 12 - RADIOACTIVITY AND NUCLEAR ENERGY

Match the following. Deuterium α -particle γ -radiation $^{23}_{11}$ Na and $^{24}_{12}$ Mg β -particle		no charge isotones fuel for nuclear fu negatively charged positively charged	d
Deuterium α -particle γ -radiation $^{23}_{11}Na$ and $^{24}_{12}Mg$		isotones fuel for nuclear fu	d
Deuterium α -particle		isotones	sion
Deuterium		isotones	
		no charge	
Match the following.			
1 MeV is equal to 1.602	$\times 10^{-13} \text{J}.$		
_		$602 \times 10^{-19} \mathrm{C}.$	
			ectrons.
The protons and neutro	ns in the nucleus toge	ther are called nucleons.	
1. ${}_{1}^{1}H$, ${}_{1}^{2}H$ and ${}_{1}^{3}H$ are three isotones of hydrogen.			
State whether the follo	owing statements are	true or false.	
The ionizing power of _	is ve	ery high.	
-	_	-	in atomic power stations.
-			
	_		
	· ·		nic numbers are called
Fill in the blanks.			
	D. LWO.	c. teri.	d. one.
	,		d one
	b. isotopes.		d. none of these.
	-		
a. α-decay.	b. β-decay.	c. γ-decay.	d. none of these.
The mass number and a	ntomic number remain	s unchanged in	
a. joule.	b. watt.	c. electron volt.	d. dioptre.
The energy released in 1	nuclear reactions is ex	pressed in units of	
		c. 10 ⁻⁵ m.	d. none of these.
The diameter of an aton			
	The diameter of an atoma. 10 ⁻¹⁵ m. The energy released in the joule. The mass number and a a. α-decay. ²³ Na and ²⁴ Mg are exampled a a. isobars. The number of neutrons a. zero. Fill in the blanks. The atoms of different elemptons of a few the journal of the phenomenon of emales are the ionizing power of a state whether the following power of a state whether the following power of a few the journal of the jour	The diameter of an atom is a. 10 ⁻¹⁵ m. b. 10 ⁻¹⁰ m. The energy released in nuclear reactions is ex a. joule. b. watt. The mass number and atomic number remain a. α-decay. b. β-decay. 23 Na and 24 Mg are examples of a. isobars. b. isotopes. The number of neutrons in an hydrogen atom a. zero. b. two. Fill in the blanks. The atoms of different elements having differer 12 C, 6 C and 6 C are all examples of The phenomenon of emission of an electron of Radioactive isotopes are used as fuel for geneen the ionizing power of is very set of the protons and neutrons in the nucleus together outermost shell of an atom cannot accompany.	The diameter of an atom is a. 10^{-15} m. b. 10^{-10} m. c. 10^{-5} m. The energy released in nuclear reactions is expressed in units of a. joule. b. watt. c. electron volt. The mass number and atomic number remains unchanged in a. α -decay. b. β -decay. c. γ -decay. $\frac{23}{11}$ Na and $\frac{24}{12}$ Mg are examples of a. isobars. b. isotopes. c. isotones. The number of neutrons in an hydrogen atom is a. zero. b. two. c. ten. Fill in the blanks. The atoms of different elements having different mass numbers and atom $\frac{12}{6}$ C, $\frac{13}{6}$ C and $\frac{14}{6}$ C are all examples of The phenomenon of emission of an electron from a radioactive element Radioactive isotopes are used as fuel for generating The ionizing power of is very high. State whether the following statements are true or false. $\frac{1}{1}$ H, $\frac{2}{1}$ H and $\frac{3}{1}$ H are three isotones of hydrogen. The protons and neutrons in the nucleus together are called nucleons. The outermost shell of an atom cannot accommodate more than 16 elements absolute charge of a proton is equal to 1.602×10^{-19} C. 1 MeV is equal to 1.602×10^{-13} J.

Chapter 12 – Radioactivity and Nuclear Energy

E. Answer the following questions.

Very short answer questions

- 1. What is the electronic configuration of sodium?
- 2. What is the atomic number of chlorine?

Short answer questions

- 1. Give one example of isobars.
- 2. Complete the following nuclear changes

$$_{Z}^{A}X \xrightarrow{\alpha\text{-decay}} X_{1} \xrightarrow{\alpha\text{-decay}} X_{2}$$

Long answer questions

- 1. Differentiate between nuclear fission and nuclear fusion.
- 2. What are the uses of radioactive isotopes in industries?

ANSWERS

WORKSHEET 2

A. Tick (✓) the correct option.

1. b

2. C

3. C

4. C

5. d

B. Fill in the blanks.

- 1. isotones
- 2. isotopes
- 3. β-decay
- 4. electricity
- 5. α-particle

C. State whether the following statements are true or false.

1 F

2. T

3. F

4. T

5. T

D. Match the following.

- Deuterium
- 2. α-particle
- 3. γ-radiation
- 4. $^{23}_{11}$ Na and $^{24}_{12}$ Mg
- 5. β-particle

- fuel for nuclear fusion
- positively charged
- no charge
- isotones
- negatively charged

E. Answer the following questions.

Very short answer questions

1. Sodium

2. 17

Short answer questions

- 1. $^{23}_{11}$ Na and $^{23}_{12}$ Mg
- 2. ${}^{A}_{Z}X \xrightarrow{\alpha\text{-decay}} {}^{A-4}_{Z-2}X \xrightarrow{\alpha\text{-decay}} {}^{A-8}_{Z-4}X$

Long answer questions

- 1. Refer Table 12.5, Page 263 to the textbook.
- 2. The uses in industries are as follows:
 - i. Radioactive isotopes are used as fuel for generating electricity in the atomic power stations.
 - ii. Radioactive isotopes are used to investigate the wear and tear in complex machines.
 - iii. The thickness of plastics, paper and metal sheets are controlled automatically during manufacturing process by use of β -particles.
 - iv. The radiation from isotopes are used for dispersing unwanted static, electricity in the air and to ionize the air in the smoke detectors.