

### 1.5.6.1: Practice Nuclear Chemistry

#### Exercise 1.5.6.1.1

What is the missing isotope in the reaction below? What type of reaction is it?



**Answer**

${}_{93}^{237}\text{Np}$  It is alpha emission.

#### Exercise 1.5.6.1.1

What is the missing isotope in the reaction below? What type of reaction is it?



**Answer**

${}_{27}^{55}\text{Co}$  It is nuclear bombardment.

#### Exercise 1.5.6.1.1

What is the missing isotope in the reaction below? What type of reaction is it?



**Answer**

${}_{40}^{90}\text{Zr}$  It is beta emission.

#### Exercise 1.5.6.1.1

What is the missing isotope in the reaction below? What type of reaction is it?



**Answer**

${}_{53}^{118}\text{I}$  It is positron emission.

#### Exercise 1.5.6.1.1

Two units used to measure absorbed dose of radiation are the rad and the gray (Gy). Their relationship is that 1 Gy = 100 rad, exactly. If a medical treatment involves the absorption of 0.45 krad, what is that in Gy?

**Answer**

4.5 Gy

#### Exercise 1.5.6.1.1

The units used to measure radioactivity of a sample are curies (Ci) or bequerel (Bq). Their relationship is that 1 Ci =  $3.7 \times 10^{10}$  Bq (2 sig dig relationship). If a radioactive sample is giving off 35 nCi, how many Bq is that?

**Answer**

1300 Bq

## More Chapter 5 Practice

## Exercise 1.5.6.1.1

What is the missing isotope in the reaction below? What type of reaction is it?



**Answer**

${}_{25}^{51}\text{Mn}$  It is beta emission.

## Exercise 1.5.6.1.1

What is the missing isotope in the reaction below? What type of reaction is it?



**Answer**

${}_{19}^{43}\text{K}$  It is nuclear bombardment.

## Exercise 1.5.6.1.1

What is the missing isotope in the reaction below? What type of reaction is it?



**Answer**

${}_{82}^{210}\text{Pb}$  It is alpha emission.

## Exercise 1.5.6.1.1

What is the missing isotope in the reaction below? What type of reaction is it?



**Answer**

${}_{79}^{188}\text{Au}$  It is positron emission.

## Exercise 1.5.6.1.1

Two units used to measure absorbed dose of radiation are the rad and the gray (Gy). Their relationship is that 1 Gy = 100 rad, exactly. If a medical treatment involves the absorption of 75 mrad, what is that in Gy?

**Answer**

0.00075 Gy

## Exercise 1.5.6.1.1

How old (in weeks) is a sample of Ce-141 that has been around for 3.80 half-lives? The half-life of Ce-141 is 32.5 days.

**Answer**

17.6 weeks

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