



Studybeesofficial

Where Minds Pollinate

Class 12
Physics

Chapter 22

Exercise Solution

Follow Our Socials



studybeesofficial



studybeesofficialpak



studybeesofficialpak

CH#22 SHORT Questions:-

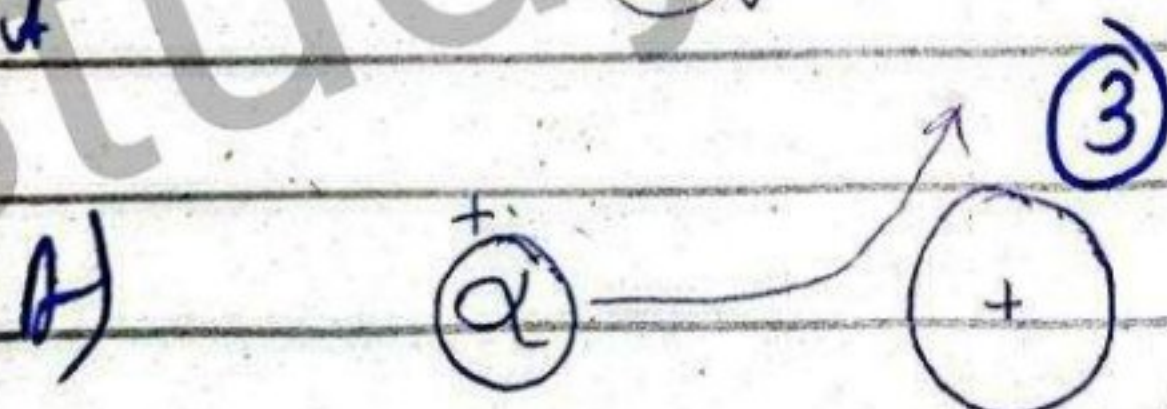
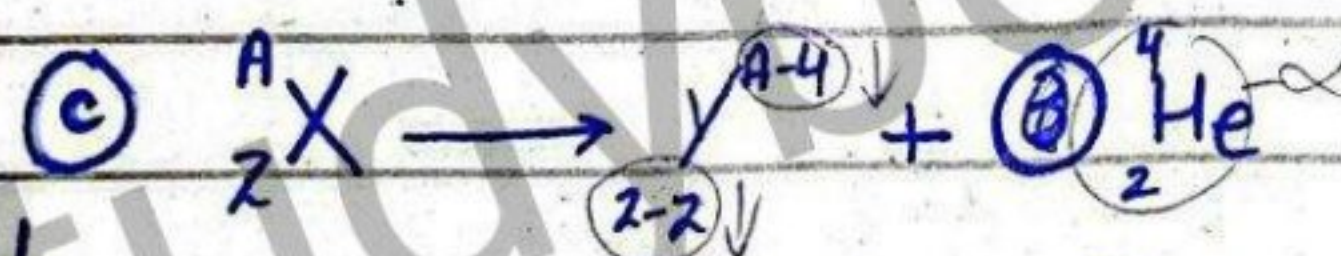
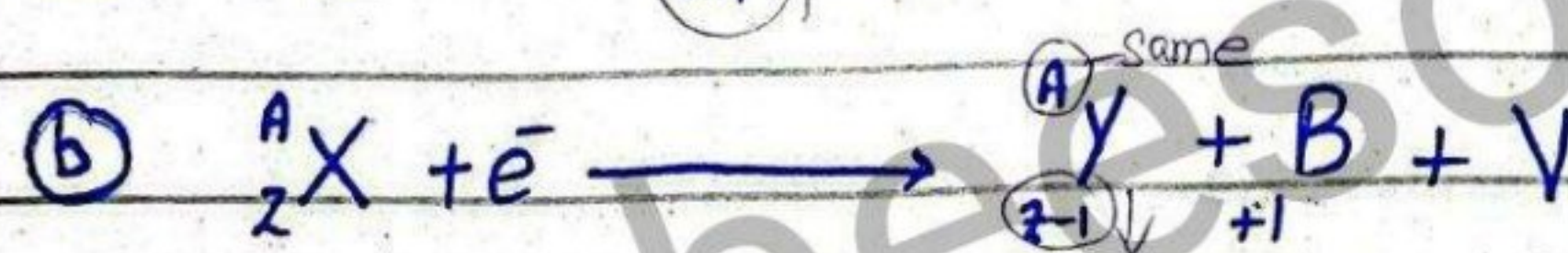
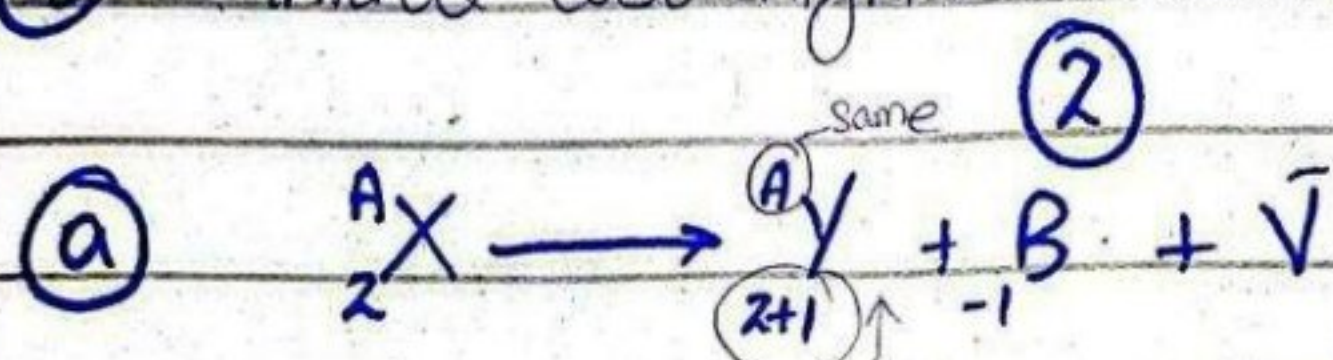
(1)

Adv Benefit

- ① Large amount energy
- ② Low cost
- ③ No pollution
- ④ Continuous source of energy (not effect by T, P, Humidity)

Draw backs:-

- ① Radioactive radiation
- ② waste product disposal
- ③ Initial cost high



→ Both have +ve charge

→ Strong-repulsion

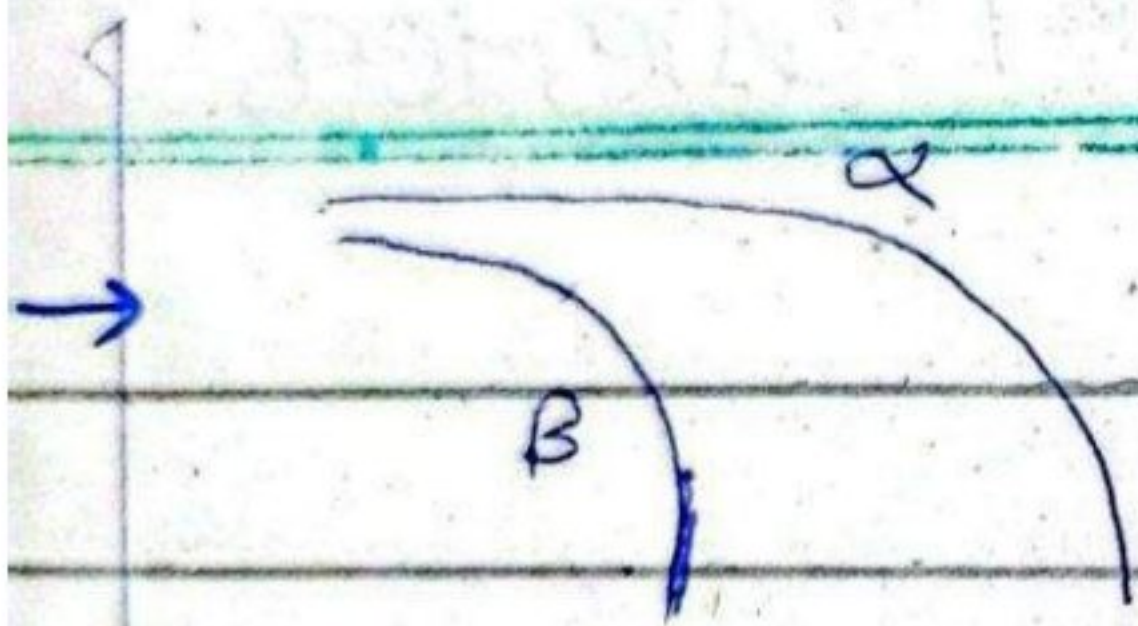
→ direct interaction not possible

④

→ $m_\alpha \gg m_\beta$

→ $\delta_\alpha \gg \delta_\beta$

→ α particle less as compared β



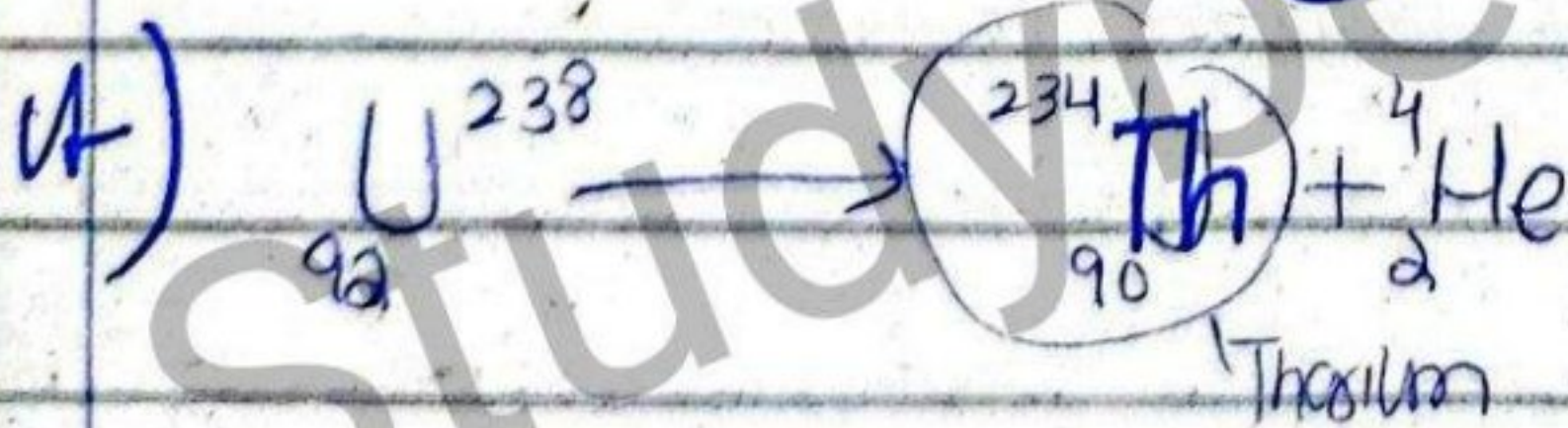
5 Q8

Answer) $\rightarrow {}_{92}\text{U}^{238} = 99.3\%$ (not fissile)

$\rightarrow {}_{92}\text{U}^{235} = 0.7\%$ (fissile)

$\rightarrow$ Enrichment of ${}_{92}\text{U}^{235}$ by gas-diffusion (3% - 5%)

6



7

1) $\Rightarrow$ neutron produce is fissile, continue further & fissile

$\Rightarrow$ fission chain reaction

$\Rightarrow$ Control fission chain reaction: (m_c)

2) Uncontrolled fission chain reaction

$> m_c$

Numerical CH# 22

(1)

Data: $T_{1/2} = 10 \text{ day}$

$N_0 = 5000$

$N = ?$

$T = 30 \text{ day}$

formula:

$$n = \frac{T}{T_{1/2}} = \frac{30}{10} = \boxed{3}$$

$$\therefore N = \frac{N_0}{2^n}$$

$$N = \frac{5000}{2^3} = \frac{5000}{8} = \boxed{625}$$

(4)

$N = ?$ $T = 40110 \text{ year}$

$N_0 = 10,000$

$T_{1/2} = 5730 \text{ years}$

$$n = \frac{T}{T_{1/2}} = \frac{40110}{5730} = \boxed{7}$$

$$\therefore N = \frac{N_0}{2^n} = \frac{100,000}{2^7} \Rightarrow \boxed{78}$$

(2)

$$\lambda = 0.000125$$

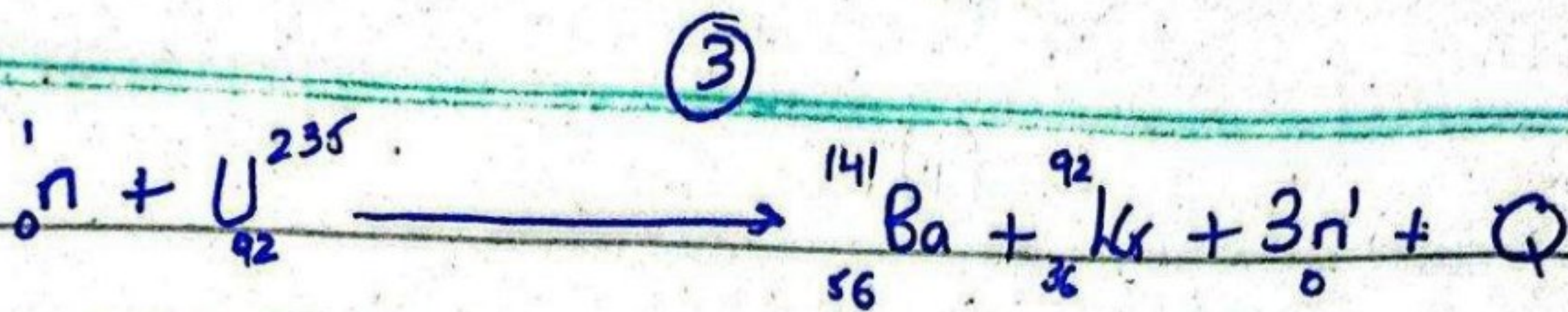
$T_{1/2} = ?$

$$\lambda T_{1/2} = 0.693$$

$$T_{1/2} = \frac{0.693}{\lambda}$$

$$T_{1/2} = \frac{0.693}{0.000125}$$

$$T_{1/2} = \boxed{5544 \text{ sec}}$$



Mass defect (Δm)

$\Delta m = \text{mass of reactant} - \text{mass of product}$

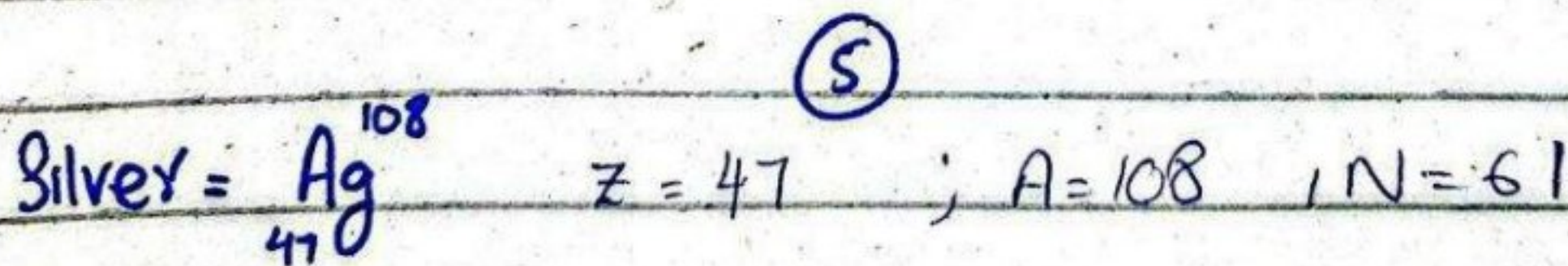
$$\Delta m = (1.008664 + 235.01461) - (140.98721 + 92.01431 + 3 \times 1.008664)$$

$\Delta m =$

$Q =$ _____ $\times 931 \text{ MeV}$

$=$ _____ μ

⑥



$$\Delta m = [Zm_p + (A-Z)m_n] - m_{\text{Ag}}$$

$$\Delta m = [47(1.007275) + 61(1.008664)] - 107.9872$$

$\Delta m =$

$Q =$ _____ $\times 931 \text{ MeV} =$ _____ μ Joule