CONCEPT: GAMMA EMISSION

● **Gamma Emission** often occurs alongside ______ or _______ decay and emits *gamma rays*.

□ **Gamma Ray** is a high-energy _________ particle, a type of energy.

- Part of _________________ radiation, has ____ mass or charge and is symbolized as:

$$^{0}_{0}\_\_ \text{ or } \_\_$$

□ Gamma rays are emitted by an atom in an ___________ state.

$$^{204}_{81}Tl^{*} \longrightarrow \_\_\_\_ + ^{0}_{0}g$$

EXAMPLE: Provide a balanced nuclear reaction for alpha decay of Am-241. Show gamma emission.

Characteristics of Gamma Rays

● Gamma rays are the ________ in size, lowest in ionizing power but _________ in penetrating power.

Types of Radioactivity

Type	Particle	Example	Size	Ionizing Power	Penetrating Power	Shield
Alpha Decay	$^{4}_{2}\alpha$	$^{171}_{78}Pt \longrightarrow ^{167}_{76}Os + ^{4}_{2}\alpha$	Largest	Highest	Lowest	Clothing, skin, paper, air
Beta Decay	$^{0}_{-1}\beta$	$^{81}_{34}Se \longrightarrow ^{81}_{35}Br + ^{0}_{-1}\beta$	Smaller	Lower	Higher	Sheet of metal or thick wood
Gamma Emission	____	$^{204}_{81}Tl^{*} \longrightarrow ^{204}_{81}Tl + ^{0}_{0}g$	________	________	________	________ ________

EXAMPLE: Which statement is true about gamma rays?

a) Can only be stopped by aluminum.

b) Possesses the highest ionizing power.

c) It is capable of penetrating through many kinds of protective materials.

d) Emitted by excited electrons.