HWU4-12

QUESTION:

The energies, *E*, for the first few states of an unknown element are shown here in arbitrary units.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| n | 1 | 2 | 3 | 4 | ... | ∞ |
| *E* | -11 | -5 | -2 | -1 | ... | 0 |

A gaseous sample of this element is bombarded by photons of various energies (in these same units).

Match each photon to the result of its absorption (or lack thereof) by an n=1 electron.

Photon Energy Result Result Choices

A 11 ? n=1 to n=2

B 9 ? n=1 to n=2

C 8 ? n=1 to n=4

D 6 ? electron ejected

not absorbed

ANSWER:

HINT:

Only photons whose energy corresponds to the energy difference between any two states in the atom are readily absorbed.