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Quiz 36

1.

p^2 and p^4:	$^1S_0$, $^1D_2$, ^3P
p^3:	^4S, ^2P, ^2D

A. What is the lowest L–S–J state from the $2s^22p^3$ configuration?

B. What is the lowest L–S–J state from the $2s2p^4$ configuration?

C. What is the lowest L–S–J state from the $2s^22p^2$ configuration?

D. The ground state of the N atom belongs to the $2s^22p^3$ configuration. There are allowed ($\Delta\ell = \pm 1$) transitions from the ground state to L–S–J states belonging to the $2s2p^4$ and $2s^22p^23s$ configurations. How will the observable transitions enable you to recognize and distinguish the $2s \rightarrow 2p$; and $2p \rightarrow 3s$ transitions? Assume that you are able to uniquely determine the J–values of the upper states (by M_J–counting or g_J–measurements).

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