

5.73

Quiz 32 **ANSWERS**

A. Specify all possible M_L and M_S values for

(i) 4S

4S has only $M_L = 0, M_S = +3/2, +1/2, -1/2, -3/2$

(ii) 2F

2F has $M_L = +3, +2, +1, 0, -1, -2, -3$
 $M_S = +1/2, -1/2$

(iii) 1P

1P has only $M_S = 0, M_L = +1, 0, -1$

B. Give M_L and M_S for

(i) $|p1\alpha\rangle|p0\alpha\rangle|p-1\alpha\rangle$

$M_L = 0, M_S = 3/2$

(ii) $|p1\alpha\rangle|p1\beta\rangle|p0\alpha\rangle$

$M_L = 2, M_S = 1/2$

C. Apply S_- to $|p1\alpha\rangle|p0\alpha\rangle|p-1\alpha\rangle$

$S_- [(p1\alpha) |p0\alpha\rangle |p-1\alpha\rangle] = \hbar[|p1\beta\rangle |p0\alpha\rangle |p-1\alpha\rangle + |p1\alpha\rangle |p0\beta\rangle |p-1\alpha\rangle + |p1\alpha\rangle |p0\alpha\rangle |p-1\beta\rangle]$

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