PROCEDURE

$j_1 = \frac{1}{2}$ $\quad j_2 = \frac{1}{2}$

locate the table with $\frac{1}{2} \times \frac{1}{2}$

J M

$\therefore |1\ 0\rangle = \frac{1}{\sqrt{2}} |\frac{1}{2}\ -\frac{1}{2}\rangle$ (2)

C_1 value $= \frac{1}{\sqrt{2}}$

(1)

$\frac{1}{2} \times \frac{1}{2}$		J		
	1	1	0	
$+\frac{1}{2}$ $\quad +\frac{1}{2}$	$+1$	0 m	0	
$+\frac{1}{2}$	$-\frac{1}{2}$	$\frac{1}{2}$ x_1	$\frac{1}{2}$	1
$-\frac{1}{2}$	$+\frac{1}{2}$	$\frac{1}{2}$ x_2	$-\frac{1}{2}$	-1
		$-\frac{1}{2}$	$-\frac{1}{2}$	1

$C_1 = \frac{1}{\sqrt{2}}$ $\qquad \frac{1}{\sqrt{2}}$

(1) j_1 j_2

(2) $|J\ m\rangle =$

$1\ 0$

I got

$x = \sqrt{x}$

$= \sqrt{\frac{1}{2}}$

$= \frac{1}{\sqrt{2}}$

from $\frac{1}{\sqrt{2}}$ value, my two values are $\frac{1}{2}$ & $-\frac{1}{2}$ for m_1 & m_2

$|1\ 0\rangle = \frac{1}{\sqrt{2}} \left|\frac{1}{2}\ \frac{1}{2} \quad \frac{1}{2}\ -\frac{1}{2}\right\rangle$

$+ \frac{1}{\sqrt{2}} \left|\frac{1}{2}\ -\frac{1}{2} \quad \frac{1}{2}\ \frac{1}{2}\right\rangle$

$j_1\ m_1 \quad j_2\ m_2$

$|1\ -1\rangle$ ✓

① $x = 1$

② $C = \sqrt{x}$

1	
−1	
1	x

$-\frac{1}{2} \quad -\frac{1}{2}$

$$|1\ -1\rangle = \sqrt{1}\ \Big|\ \tfrac{1}{2}\ -\tfrac{1}{2}\ \ \tfrac{1}{2}\ -\tfrac{1}{2}\Big\rangle$$

$j_1 \quad m_1 \quad j_2 \quad m_2$

- $|1\ 0\rangle$ 2 combinations $|\uparrow\downarrow\rangle$ & $|\downarrow\uparrow\rangle$ and which is why you get summation of two equations
- $|1\ 1\rangle$ & $|1\ -1\rangle$ one equation each

Problem

$$|1\ 1\rangle = \sqrt{1}\ \Big|\ \tfrac{1}{2}\ \tfrac{1}{2}\ \ \tfrac{1}{2}\ \tfrac{1}{2}\Big\rangle$$

$j_1 \quad m_1 \quad j_2 \quad m_2$

$$|0\ \ 0\rangle = \frac{1}{\sqrt{2}}\Big|\tfrac{1}{2}\ \tfrac{1}{2}\ \ \tfrac{1}{2}\ -\tfrac{1}{2}\Big\rangle$$

$$-\frac{1}{\sqrt{2}}\Big|\tfrac{1}{2}\ -\tfrac{1}{2}\ \ \tfrac{1}{2}\ \tfrac{1}{2}\Big\rangle$$

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