J. The Higher Order Groups

T_d	E	$8C_3$	$3C_2$	$6S_4$	$6\sigma_d$			
A_1	1	1	1	1	1		$x^2+y^2+z^2$	xyz
A_2	1	1	1	−1	−1			
E	2	−1	2	0	0		$(2z^2-x^2-y^2, x^2-y^2)$	
T_1	3	0	−1	1	−1	(R_x, R_y, R_z)		$[x(z^2-y^2), y(z^2-x^2), z(x^2-y^2)]$
T_2	3	0	−1	−1	1	(x, y, z)	(xy, xz, yz)	(x^3, y^3, z^3)

O_h	E	$8C_3$	$6C_2$	$6C_4$	$3C_2(=C_4^2)$	i	$6S_4$	$8S_6$	$3\sigma_h$	$6\sigma_d$			
A_{1g}	1	1	1	1	1	1	1	1	1	1		$x^2+y^2+z^2$	
A_{2g}	1	1	−1	−1	1	1	−1	1	1	−1			
E_g	2	−1	0	0	2	2	0	−1	2	0		$(2z^2-x^2-y^2, x^2-y^2)$	
T_{1g}	3	0	−1	1	−1	3	1	0	−1	−1	(R_x, R_y, R_z)		
T_{2g}	3	0	1	−1	−1	3	−1	0	−1	1		(xz, yz, xy)	
A_{1u}	1	1	1	1	1	−1	−1	−1	−1	−1			
A_{2u}	1	1	−1	−1	1	−1	1	−1	−1	1			xyz
E_u	2	−1	0	0	2	−2	0	1	−2	0			
T_{1u}	3	0	−1	1	−1	−3	−1	0	1	1	(x, y, z)		(x^3, y^3, z^3)
T_{2u}	3	0	1	−1	−1	−3	1	0	1	−1			$[x(z^2-y^2), y(z^2-x^2),$ $z(x^2-y^2)]$

I_h	E	$12C_5$	$12C_5^2$	$20C_3$	$15C_2$	i	$12S_{10}$	$12S_{10}^3$	$20S_6$	15σ			
A_g	1	1	1	1	1	1	1	1	1	1		$x^2+y^2+z^2$	
T_{1g}	3	$\frac{1}{2}(1+\sqrt{5})$	$\frac{1}{2}(1-\sqrt{5})$	0	−1	3	$\frac{1}{2}(1-\sqrt{5})$	$\frac{1}{2}(1+\sqrt{5})$	0	−1	(R_x, R_y, R_z)		
T_{2g}	3	$\frac{1}{2}(1-\sqrt{5})$	$\frac{1}{2}(1+\sqrt{5})$	0	−1	3	$\frac{1}{2}(1+\sqrt{5})$	$\frac{1}{2}(1-\sqrt{5})$	0	−1			
G_g	4	−1	−1	1	0	4	−1	−1	1	0			
H_g	5	0	0	−1	1	5	0	0	−1	1		$(2z^2-x^2-y^2,$ $x^2-y^2,$ $xy, yz, zx)$	
A_u	1	1	1	1	1	−1	−1	−1	−1	−1			
T_{1u}	3	$\frac{1}{2}(1+\sqrt{5})$	$\frac{1}{2}(1-\sqrt{5})$	0	−1	−3	$-\frac{1}{2}(1-\sqrt{5})$	$-\frac{1}{2}(1+\sqrt{5})$	0	1	(x, y, z)		
T_{2u}	3	$\frac{1}{2}(1-\sqrt{5})$	$\frac{1}{2}(1+\sqrt{5})$	0	−1	−3	$-\frac{1}{2}(1+\sqrt{5})$	$-\frac{1}{2}(1-\sqrt{5})$	0	1			(x^3, y^3, z^3)
G_u	4	−1	−1	1	0	−4	1	1	−1	0			$[x(z^2-y^2), y(z^2-x^2),$ $z(x^2-y^2), xyz]$
H_u	5	0	0	−1	1	−5	0	0	1	−1			

Source: B. E. Douglas and C. A. Hollingsworth, "Symmetry in Bonding and Spectra: An Introduction," 1985, Orlando, FL; Academic Press, pp. 391–408.