Model for “Mn3Sn”

Generated on 2026-01-24 10:57:22 by MultiPie 2.0.4

General Condition

- Basis type: `lg`
- SAMB selection:
  - Type: `[Q, G]`
  - Rank: `[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]`
  - Irrep.: $[A_{1g}, A_{2g}, B_{1g}, B_{2g}, E_{1g}, E_{2g}, A_{1u}, A_{2u}, B_{1u}, B_{2u}, E_{1u}, E_{2u}]$
  - Spin (s): `[0, 1]`
- Atomic selection:
  - Type: `[Q, G, M, T]`
  - Rank: `[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]`
  - Irrep.: $[A_{1g}, A_{2g}, B_{1g}, B_{2g}, E_{1g}, E_{2g}, A_{1u}, A_{2u}, B_{1u}, B_{2u}, E_{1u}, E_{2u}]$
  - Spin (s): `[0, 1]`
- Site-cluster selection:
  - Rank: `[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]`
  - Irrep.: $[A_{1g}, A_{2g}, B_{1g}, B_{2g}, E_{1g}, E_{2g}, A_{1u}, A_{2u}, B_{1u}, B_{2u}, E_{1u}, E_{2u}]$
- Bond-cluster selection:
  - Type: `[Q, G, M, T]`
  - Rank: `[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]`
  - Irrep.: $[A_{1g}, A_{2g}, B_{1g}, B_{2g}, E_{1g}, E_{2g}, A_{1u}, A_{2u}, B_{1u}, B_{2u}, E_{1u}, E_{2u}]$
- Max. neighbor: `10`
- Search cell range: `(-2, 3), (-2, 3), (-2, 3)`
- Toroidal priority: `false`

Group and Unit Cell

- Group: SG No. 194 D_{6h}^{4} $P6_3/mmc$ [hexagonal]
- Associated point group: PG No. 194 D_{6h} $6/mmm$ [hexagonal]
- Unit cell:
  $a =$ 1.00000, $b =$ 1.00000, $c =$ 1.00000, $\alpha =$ 90.0, $\beta =$ 90.0, $\gamma =$ 120.0
- Lattice vectors (conventional cell):
  $\boldsymbol{a}_1 =$ [1.00000, 0.00000, 0.00000]
  $\boldsymbol{a}_2 =$ [-0.50000, 0.86603, 0.00000]
  $\boldsymbol{a}_3 =$ [0.00000, 0.00000, 1.00000]

Symmetry Operation

Table 1: Symmetry operation

#	SO	#	SO	#	SO	#	SO	#	SO
1	$\{1\|0\}$	2	$\{3^{+}_{001}\|0\}$	3	$\{3^{-}_{001}\|0\}$	4	$\{2_{001}\|00\frac{1}{2}\}$	5	$\{6^{-}_{001}\|00\frac{1}{2}\}$
6	$\{6^{+}_{001}\|00\frac{1}{2}\}$	7	$\{2_{110}\|0\}$	8	$\{2_{100}\|0\}$	9	$\{2_{010}\|0\}$	10	$\{2_{1-10}\|00\frac{1}{2}\}$
11	$\{2_{120}\|00\frac{1}{2}\}$	12	$\{2_{210}\|00\frac{1}{2}\}$	13	$\{-1\|0\}$	14	$\{-3^{+}_{001}\|0\}$	15	$\{-3^{-}_{001}\|0\}$
16	$\{\mathrm{m}_{001}\|00\frac{1}{2}\}$	17	$\{-6^{-}_{001}\|00\frac{1}{2}\}$	18	$\{-6^{+}_{001}\|00\frac{1}{2}\}$	19	$\{\mathrm{m}_{110}\|0\}$	20	$\{\mathrm{m}_{100}\|0\}$
21	$\{\mathrm{m}_{010}\|0\}$	22	$\{\mathrm{m}_{1-10}\|00\frac{1}{2}\}$	23	$\{\mathrm{m}_{120}\|00\frac{1}{2}\}$	24	$\{\mathrm{m}_{210}\|00\frac{1}{2}\}$		

Harmonics

Table 2: Harmonics

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
1	$\mathbb{Q}_0(A_{1g})$	A_{1g}	0	$Q,\,T$	-	-	1
2	$\mathbb{Q}_2(A_{1g})$	A_{1g}	2	$Q,\,T$	-	-	$-\frac{x^2}{2}-\frac{y^2}{2}+z^2$
3	$\mathbb{Q}_4(A_{1g})$	A_{1g}	4	$Q,\,T$	-	-	$\frac{3x^4}{8}+\frac{3x^2y^2}{4}-3x^2z^2+\frac{3y^4}{8}-3y^2z^2+z^4$
4	$\mathbb{Q}_6(A_{1g},2)$	A_{1g}	6	$Q,\,T$	2	-	$\frac{\sqrt{462}(x-y)(x+y)\left(x^2-4xy+y^2\right)\left(x^2+4xy+y^2\right)}{32}$
5	$\mathbb{G}_0(A_{1u})$	A_{1u}	0	$G,\,M$	-	-	1

continued ...

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
6	$\mathbb{G}_2(A_{1u})$	A_{1u}	2	$G,\ M$	-	-	$-\frac{x^2}{2}-\frac{y^2}{2}+z^2$
7	$\mathbb{G}_4(A_{1u})$	A_{1u}	4	$G,\ M$	-	-	$\frac{3x^4}{8}+\frac{3x^2y^2}{4}-3x^2z^2+\frac{3y^4}{8}-3y^2z^2+z^4$
8	$\mathbb{G}_6(A_{1u},2)$	A_{1u}	6	$G,\ M$	2	-	$\frac{\sqrt{462}(x-y)(x+y)\left(x^2-4xy+y^2\right)\left(x^2+4xy+y^2\right)}{32}$
9	$\mathbb{Q}_7(A_{1u})$	A_{1u}	7	$Q,\ T$	-	-	$\frac{\sqrt{6006}xyz\left(x^2-3y^2\right)\left(3x^2-y^2\right)}{16}$
10	$\mathbb{G}_1(A_{2g})$	A_{2g}	1	$G,\ M$	-	-	z
11	$\mathbb{G}_3(A_{2g})$	A_{2g}	3	$G,\ M$	-	-	$-\frac{z\left(3x^2+3y^2-2z^2\right)}{2}$
12	$\mathbb{G}_5(A_{2g})$	A_{2g}	5	$G,\ M$	-	-	$\frac{z\left(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4\right)}{8}$
13	$\mathbb{Q}_6(A_{2g})$	A_{2g}	6	$Q,\ T$	-	-	$\frac{\sqrt{462}xy\left(x^2-3y^2\right)\left(3x^2-y^2\right)}{16}$
14	$\mathbb{Q}_1(A_{2u})$	A_{2u}	1	$Q,\ T$	-	-	z
15	$\mathbb{Q}_3(A_{2u})$	A_{2u}	3	$Q,\ T$	-	-	$-\frac{z\left(3x^2+3y^2-2z^2\right)}{2}$
16	$\mathbb{G}_6(A_{2u})$	A_{2u}	6	$G,\ M$	-	-	$\frac{\sqrt{462}xy\left(x^2-3y^2\right)\left(3x^2-y^2\right)}{16}$
17	$\mathbb{Q}_7(A_{2u},2)$	A_{2u}	7	$Q,\ T$	2	-	$\frac{\sqrt{6006}z(x-y)(x+y)\left(x^2-4xy+y^2\right)\left(x^2+4xy+y^2\right)}{32}$
18	$\mathbb{G}_3(B_{1g})$	B_{1g}	3	$G,\ M$	-	-	$\frac{\sqrt{10}y\left(3x^2-y^2\right)}{4}$
19	$\mathbb{Q}_4(B_{1g})$	B_{1g}	4	$Q,\ T$	-	-	$\frac{\sqrt{70}xz\left(x^2-3y^2\right)}{4}$
20	$\mathbb{Q}_6(B_{1g})$	B_{1g}	6	$Q,\ T$	-	-	$-\frac{\sqrt{210}xz\left(x^2-3y^2\right)\left(3x^2+3y^2-8z^2\right)}{16}$
21	$\mathbb{Q}_3(B_{1u})$	B_{1u}	3	$Q,\ T$	-	-	$\frac{\sqrt{10}y\left(3x^2-y^2\right)}{4}$
22	$\mathbb{G}_4(B_{1u})$	B_{1u}	4	$G,\ M$	-	-	$\frac{\sqrt{70}xz\left(x^2-3y^2\right)}{4}$
23	$\mathbb{Q}_5(B_{1u})$	B_{1u}	5	$Q,\ T$	-	-	$-\frac{\sqrt{70}y\left(3x^2-y^2\right)\left(x^2+y^2-8z^2\right)}{16}$
24	$\mathbb{Q}_9(B_{1u},1)$	B_{1u}	9	$Q,\ T$	1	-	$\frac{\sqrt{24310}y\left(3x^2-y^2\right)\left(3x^6-27x^4y^2+33x^2y^4-y^6\right)}{256}$
25	$\mathbb{G}_3(B_{2g})$	B_{2g}	3	$G,\ M$	-	-	$\frac{\sqrt{10}x\left(x^2-3y^2\right)}{4}$
26	$\mathbb{Q}_4(B_{2g})$	B_{2g}	4	$Q,\ T$	-	-	$\frac{\sqrt{70}yz\left(3x^2-y^2\right)}{4}$

continued ...

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
27	$\mathbb{Q}_6(B_{2g})$	B_{2g}	6	Q, T	-	-	$-\frac{\sqrt{210}yz\left(3x^2-y^2\right)\left(3x^2+3y^2-8z^2\right)}{16}$
28	$\mathbb{Q}_3(B_{2u})$	B_{2u}	3	Q, T	-	-	$\frac{\sqrt{10}x\left(x^2-3y^2\right)}{4}$
29	$\mathbb{G}_4(B_{2u})$	B_{2u}	4	G, M	-	-	$\frac{\sqrt{70}yz\left(3x^2-y^2\right)}{4}$
30	$\mathbb{Q}_5(B_{2u})$	B_{2u}	5	Q, T	-	-	$-\frac{\sqrt{70}x\left(x^2-3y^2\right)\left(x^2+y^2-8z^2\right)}{16}$
31	$\mathbb{Q}_9(B_{2u}, 1)$	B_{2u}	9	Q, T	1	-	$\frac{\sqrt{24310}x\left(x^2-3y^2\right)\left(x^6-33x^4y^2+27x^2y^4-3y^6\right)}{256}$
32	$\mathbb{G}_{1,1}(E_{1g})$	E_{1g}	1	G, M	-	1	x
33	$\mathbb{G}_{1,2}(E_{1g})$					2	y
34	$\mathbb{Q}_{2,1}(E_{1g})$	E_{1g}	2	Q, T	-	1	$\sqrt{3}yz$
35	$\mathbb{Q}_{2,2}(E_{1g})$					2	$-\sqrt{3}xz$
36	$\mathbb{G}_{3,1}(E_{1g})$	E_{1g}	3	G, M	-	1	$-\frac{\sqrt{6}x\left(x^2+y^2-4z^2\right)}{4}$
37	$\mathbb{G}_{3,2}(E_{1g})$					2	$-\frac{\sqrt{6}y\left(x^2+y^2-4z^2\right)}{4}$
38	$\mathbb{Q}_{4,1}(E_{1g})$	E_{1g}	4	Q, T	-	1	$-\frac{\sqrt{10}yz\left(3x^2+3y^2-4z^2\right)}{4}$
39	$\mathbb{Q}_{4,2}(E_{1g})$					2	$\frac{\sqrt{10}xz\left(3x^2+3y^2-4z^2\right)}{4}$
40	$\mathbb{G}_{5,1}(E_{1g}, 1)$	E_{1g}	5	G, M	1	1	$\frac{3\sqrt{14}x\left(x^4-10x^2y^2+5y^4\right)}{16}$
41	$\mathbb{G}_{5,2}(E_{1g}, 1)$					2	$-\frac{3\sqrt{14}y\left(5x^4-10x^2y^2+y^4\right)}{16}$
42	$\mathbb{Q}_{6,1}(E_{1g}, 1)$	E_{1g}	6	Q, T	1	1	$\frac{3\sqrt{154}yz\left(5x^4-10x^2y^2+y^4\right)}{16}$
43	$\mathbb{Q}_{6,2}(E_{1g}, 1)$					2	$\frac{3\sqrt{154}xz\left(x^4-10x^2y^2+5y^4\right)}{16}$
44	$\mathbb{Q}_{6,1}(E_{1g}, 2)$	E_{1g}	6	Q, T	2	1	$\frac{\sqrt{21}yz\left(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4\right)}{8}$
45	$\mathbb{Q}_{6,2}(E_{1g}, 2)$					2	$-\frac{\sqrt{21}xz\left(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4\right)}{8}$
46	$\mathbb{Q}_{8,1}(E_{1g}, 1)$	E_{1g}	8	Q, T	1	1	$\frac{3\sqrt{715}yz\left(7x^6-35x^4y^2+21x^2y^4-y^6\right)}{32}$
47	$\mathbb{Q}_{8,2}(E_{1g}, 1)$					2	$-\frac{3\sqrt{715}xz\left(x^6-21x^4y^2+35x^2y^4-7y^6\right)}{32}$

continued …

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
48	$\mathbb{Q}_{1,1}(E_{1u})$	E_{1u}	1	Q, T	-	1	x
49	$\mathbb{Q}_{1,2}(E_{1u})$					2	y
50	$\mathbb{G}_{2,1}(E_{1u})$	E_{1u}	2	G, M	-	1	$\sqrt{3}yz$
51	$\mathbb{G}_{2,2}(E_{1u})$					2	$-\sqrt{3}xz$
52	$\mathbb{Q}_{3,1}(E_{1u})$	E_{1u}	3	Q, T	-	1	$-\frac{\sqrt{6}x\left(x^{2}+y^{2}-4z^{2}\right)}{4}$
53	$\mathbb{Q}_{3,2}(E_{1u})$					2	$-\frac{\sqrt{6}y\left(x^{2}+y^{2}-4z^{2}\right)}{4}$
54	$\mathbb{G}_{4,1}(E_{1u})$	E_{1u}	4	G, M	-	1	$-\frac{\sqrt{10}yz\left(3x^{2}+3y^{2}-4z^{2}\right)}{4}$
55	$\mathbb{G}_{4,2}(E_{1u})$					2	$\frac{\sqrt{10}xz\left(3x^{2}+3y^{2}-4z^{2}\right)}{4}$
56	$\mathbb{Q}_{5,1}(E_{1u},1)$	E_{1u}	5	Q, T	1	1	$\frac{3\sqrt{14}x\left(x^{4}-10x^{2}y^{2}+5y^{4}\right)}{16}$
57	$\mathbb{Q}_{5,2}(E_{1u},1)$					2	$-\frac{3\sqrt{14}y\left(5x^{4}-10x^{2}y^{2}+y^{4}\right)}{16}$
58	$\mathbb{Q}_{5,1}(E_{1u},2)$	E_{1u}	5	Q, T	2	1	$\frac{\sqrt{15}x\left(x^{4}+2x^{2}y^{2}-12x^{2}z^{2}+y^{4}-12y^{2}z^{2}+8z^{4}\right)}{8}$
59	$\mathbb{Q}_{5,2}(E_{1u},2)$					2	$\frac{\sqrt{15}y\left(x^{4}+2x^{2}y^{2}-12x^{2}z^{2}+y^{4}-12y^{2}z^{2}+8z^{4}\right)}{8}$
60	$\mathbb{Q}_{7,1}(E_{1u},1)$	E_{1u}	7	Q, T	1	1	$\frac{\sqrt{429}x\left(x^{6}-21x^{4}y^{2}+35x^{2}y^{4}-7y^{6}\right)}{32}$
61	$\mathbb{Q}_{7,2}(E_{1u},1)$					2	$\frac{\sqrt{429}y\left(7x^{6}-35x^{4}y^{2}+21x^{2}y^{4}-y^{6}\right)}{32}$
62	$\mathbb{Q}_{2,1}(E_{2g})$	E_{2g}	2	Q, T	-	1	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
63	$\mathbb{Q}_{2,2}(E_{2g})$					2	$-\sqrt{3}xy$
64	$\mathbb{G}_{3,1}(E_{2g})$	E_{2g}	3	G, M	-	1	$\sqrt{15}xyz$
65	$\mathbb{G}_{3,2}(E_{2g})$					2	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
66	$\mathbb{Q}_{4,1}(E_{2g},1)$	E_{2g}	4	Q, T	1	1	$\frac{\sqrt{35}\left(x^{2}-2xy-y^{2}\right)\left(x^{2}+2xy-y^{2}\right)}{8}$
67	$\mathbb{Q}_{4,2}(E_{2g},1)$					2	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
68	$\mathbb{Q}_{4,1}(E_{2g},2)$	E_{2g}	4	Q, T	2	1	$-\frac{\sqrt{5}(x-y)(x+y)\left(x^{2}+y^{2}-6z^{2}\right)}{4}$

continued …

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
69	$\mathbb{Q}_{4,2}(E_{2g},2)$					2	$\frac{\sqrt{5}xy\left(x^2+y^2-6z^2\right)}{2}$
70	$\mathbb{Q}_{6,1}(E_{2g},1)$	E_{2g}	6	$Q,\ T$	1	1	$-\frac{3\sqrt{7}\left(x^2+y^2-10z^2\right)\left(x^2-2xy-y^2\right)\left(x^2+2xy-y^2\right)}{16}$
71	$\mathbb{Q}_{6,2}(E_{2g},1)$					2	$-\frac{3\sqrt{7}xy(x-y)(x+y)\left(x^2+y^2-10z^2\right)}{4}$
72	$\mathbb{Q}_{6,1}(E_{2g},2)$	E_{2g}	6	$Q,\ T$	2	1	$\frac{\sqrt{210}(x-y)(x+y)\left(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4\right)}{32}$
73	$\mathbb{Q}_{6,2}(E_{2g},2)$					2	$-\frac{\sqrt{210}xy\left(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4\right)}{16}$
74	$\mathbb{Q}_{8,1}(E_{2g},1)$	E_{2g}	8	$Q,\ T$	1	1	$\frac{3\sqrt{715}\left(x^4-4x^3y-6x^2y^2+4xy^3+y^4\right)\left(x^4+4x^3y-6x^2y^2-4xy^3+y^4\right)}{128}$
75	$\mathbb{Q}_{8,2}(E_{2g},1)$					2	$-\frac{3\sqrt{715}xy(x-y)(x+y)\left(x^2-2xy-y^2\right)\left(x^2+2xy-y^2\right)}{16}$
76	$\mathbb{G}_{2,1}(E_{2u})$	E_{2u}	2	$G,\ M$	-	1	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
77	$\mathbb{G}_{2,2}(E_{2u})$					2	$-\sqrt{3}xy$
78	$\mathbb{Q}_{3,1}(E_{2u})$	E_{2u}	3	$Q,\ T$	-	1	$\sqrt{15}xyz$
79	$\mathbb{Q}_{3,2}(E_{2u})$					2	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
80	$\mathbb{G}_{4,1}(E_{2u},1)$	E_{2u}	4	$G,\ M$	1	1	$\frac{\sqrt{35}\left(x^2-2xy-y^2\right)\left(x^2+2xy-y^2\right)}{8}$
81	$\mathbb{G}_{4,2}(E_{2u},1)$					2	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
82	$\mathbb{G}_{4,1}(E_{2u},2)$	E_{2u}	4	$G,\ M$	2	1	$-\frac{\sqrt{5}(x-y)(x+y)\left(x^2+y^2-6z^2\right)}{4}$
83	$\mathbb{G}_{4,2}(E_{2u},2)$					2	$\frac{\sqrt{5}xy\left(x^2+y^2-6z^2\right)}{2}$
84	$\mathbb{Q}_{5,1}(E_{2u},1)$	E_{2u}	5	$Q,\ T$	1	1	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$
85	$\mathbb{Q}_{5,2}(E_{2u},1)$					2	$\frac{3\sqrt{35}z\left(x^2-2xy-y^2\right)\left(x^2+2xy-y^2\right)}{8}$
86	$\mathbb{Q}_{5,1}(E_{2u},2)$	E_{2u}	5	$Q,\ T$	2	1	$-\frac{\sqrt{105}xyz\left(x^2+y^2-2z^2\right)}{2}$
87	$\mathbb{Q}_{5,2}(E_{2u},2)$					2	$-\frac{\sqrt{105}z(x-y)(x+y)\left(x^2+y^2-2z^2\right)}{4}$
88	$\mathbb{Q}_{9,1}(E_{2u},1)$	E_{2u}	9	$Q,\ T$	1	1	$\frac{3\sqrt{12155}xyz(x-y)(x+y)\left(x^2-2xy-y^2\right)\left(x^2+2xy-y^2\right)}{16}$
89	$\mathbb{Q}_{9,2}(E_{2u},1)$					2	$\frac{3\sqrt{12155}z\left(x^4-4x^3y-6x^2y^2+4xy^3+y^4\right)\left(x^4+4x^3y-6x^2y^2-4xy^3+y^4\right)}{128}$

Table 3: dimension = 40

#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)
0	$\vert d_u\rangle$ @Mn(1)	1	$\vert d_{xz}\rangle$ @Mn(1)	2	$\vert d_{yz}\rangle$ @Mn(1)	3	$\vert d_{xy}\rangle$ @Mn(1)	4	$\vert d_v\rangle$ @Mn(1)
5	$\vert d_u\rangle$ @Mn(2)	6	$\vert d_{xz}\rangle$ @Mn(2)	7	$\vert d_{yz}\rangle$ @Mn(2)	8	$\vert d_{xy}\rangle$ @Mn(2)	9	$\vert d_v\rangle$ @Mn(2)
10	$\vert d_u\rangle$ @Mn(3)	11	$\vert d_{xz}\rangle$ @Mn(3)	12	$\vert d_{yz}\rangle$ @Mn(3)	13	$\vert d_{xy}\rangle$ @Mn(3)	14	$\vert d_v\rangle$ @Mn(3)
15	$\vert d_u\rangle$ @Mn(4)	16	$\vert d_{xz}\rangle$ @Mn(4)	17	$\vert d_{yz}\rangle$ @Mn(4)	18	$\vert d_{xy}\rangle$ @Mn(4)	19	$\vert d_v\rangle$ @Mn(4)
20	$\vert d_u\rangle$ @Mn(5)	21	$\vert d_{xz}\rangle$ @Mn(5)	22	$\vert d_{yz}\rangle$ @Mn(5)	23	$\vert d_{xy}\rangle$ @Mn(5)	24	$\vert d_v\rangle$ @Mn(5)
25	$\vert d_u\rangle$ @Mn(6)	26	$\vert d_{xz}\rangle$ @Mn(6)	27	$\vert d_{yz}\rangle$ @Mn(6)	28	$\vert d_{xy}\rangle$ @Mn(6)	29	$\vert d_v\rangle$ @Mn(6)
30	$\vert d_u\rangle$ @Sn(1)	31	$\vert d_{xz}\rangle$ @Sn(1)	32	$\vert d_{yz}\rangle$ @Sn(1)	33	$\vert d_{xy}\rangle$ @Sn(1)	34	$\vert d_v\rangle$ @Sn(1)
35	$\vert d_u\rangle$ @Sn(2)	36	$\vert d_{xz}\rangle$ @Sn(2)	37	$\vert d_{yz}\rangle$ @Sn(2)	38	$\vert d_{xy}\rangle$ @Sn(2)	39	$\vert d_v\rangle$ @Sn(2)

Table 4: Atomic basis (orbital part only)

orbital	definition
$\vert d_u\rangle$	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
$\vert d_{xz}\rangle$	$\sqrt{3}xz$

continued ...

Table 4

orbital	definition
$\lvert d_{yz}\rangle$	$\sqrt{3}yz$
$\lvert d_{xy}\rangle$	$\sqrt{3}xy$
$\lvert d_{v}\rangle$	$\frac{\sqrt{3}(x^2-y^2)}{2}$

SAMB

720 (all 720) SAMBs

- 'Mn' site-cluster : Mn
  * bra: $\langle d_u\rvert$, $\langle d_{xz}\rvert$, $\langle d_{yz}\rvert$, $\langle d_{xy}\rvert$, $\langle d_v\rvert$
  * ket: $\lvert d_u\rangle$, $\lvert d_{xz}\rangle$, $\lvert d_{yz}\rangle$, $\lvert d_{xy}\rangle$, $\lvert d_v\rangle$
  * wyckoff: 6h

$\boxed{\text{z1}}$ $\mathbb{Q}_0^{(c)}(A_{1g},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z2}}$ $\mathbb{Q}_0^{(c)}(A_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

$\boxed{\text{z3}}$ $\mathbb{Q}_2^{(c)}(A_{1g},a) = \mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z4}}$ $\mathbb{Q}_2^{(c)}(A_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

$\boxed{\text{z5}}$ $\mathbb{Q}_4^{(c)}(A_{1g}) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z6}}$ $\mathbb{Q}_6^{(c)}(A_{1g},2) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

$\boxed{\text{z41}}$ $\mathbb{Q}_7^{(c)}(A_{1u}) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

$\boxed{\text{z42}}$ $\mathbb{G}_2^{(c)}(A_{1u}) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2}$

$\boxed{\text{z43}}$ $\mathbb{G}_4^{(c)}(A_{1u}) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2}$

$\boxed{\text{z67}}$ $\mathbb{Q}_6^{(c)}(A_{2g}) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

$\boxed{\text{z68}}$ $\mathbb{G}_1^{(c)}(A_{2g}) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

$\boxed{\text{z69}}$ $\mathbb{G}_3^{(c)}(A_{2g}) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

$\boxed{\text{z95}}$ $\mathbb{Q}_1^{(c)}(A_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2}$

$\boxed{\text{z96}}$ $\mathbb{Q}_1^{(c)}(A_{2u},b) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_3^{(s)}(B_{1u})$

$\boxed{\text{z97}}$ $\mathbb{Q}_3^{(c)}(A_{2u}) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2}$

$\boxed{\text{z126}}$ $\mathbb{Q}_4^{(c)}(B_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

$\boxed{\text{z127}}$ $\mathbb{Q}_4^{(c)}(B_{1g},b) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z128}}$ $\mathbb{Q}_4^{(c)}(B_{1g},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

$\boxed{\text{z129}}$ $\mathbb{Q}_3^{(c)}(B_{1u},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

$\boxed{\text{z130}}$ $\mathbb{Q}_3^{(c)}(B_{1u},b) = -\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

$\boxed{\text{z131}}$ $\mathbb{Q}_3^{(c)}(B_{1u},c) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2}$

$\boxed{\text{z132}}$ $\mathbb{Q}_3^{(c)}(B_{1u},d) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

$\boxed{\text{z133}}$ $\mathbb{Q}_3^{(c)}(B_{1u},e) = -\frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{58}$

$\boxed{\text{z134}}$ $\mathbb{Q}_5^{(c)}(B_{1u}) = -\frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{58} - \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{29}$

$\boxed{\text{z135}}$ $\mathbb{Q}_4^{(c)}(B_{2g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

$\boxed{\text{z136}}$ $\mathbb{Q}_4^{(c)}(B_{2g},b) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z137}}$ $\mathbb{Q}_4^{(c)}(B_{2g},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

$\boxed{\text{z244}}$ $\mathbb{Q}_3^{(c)}(B_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2}$

$\boxed{\text{z245}}$ $\mathbb{Q}_3^{(c)}(B_{2u},b) = \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{58}$

$\boxed{\text{z246}}$ $\mathbb{Q}_5^{(c)}(B_{2u}) = \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{29}$

$\boxed{\text{z247}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z248}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z249}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g},b) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

$\boxed{\text{z250}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g},b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

$\boxed{\text{z251}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g},c) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8}$

$\boxed{\text{z252}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8} - \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8}$

$\boxed{\text{z253}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$$

$\boxed{\text{z254}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$$

$\boxed{\text{z255}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},b) = -\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8}$$

$\boxed{\text{z256}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},b) = \frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8}$$

$\boxed{\text{z257}}$ $$\mathbb{Q}_{6,1}^{(c)}(E_{1g},1) = -\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$$

$\boxed{\text{z258}}$ $$\mathbb{Q}_{6,2}^{(c)}(E_{1g},1) = \frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$$

$\boxed{\text{z259}}$ $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2}$$

$\boxed{\text{z260}}$ $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2}$$

$\boxed{\text{z261}}$ $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},b) = -\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(s)}(B_{1u})}{2}$$

$\boxed{\text{z376}}$ $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(s)}(B_{1u})}{2}$$

$\boxed{\text{z377}}$ $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},c) = \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14} - \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14}$$

$\boxed{\text{z378}}$ $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},c) = -\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14} - \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14}$$

$\boxed{\text{z404}}$ $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},d) = \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(s)}(B_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(s)}(B_{1u})}{58}$$

$\boxed{\text{z405}}$ $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},d) = -\frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(s)}(B_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(s)}(B_{1u})}{58}$$

$$\boxed{\text{z406}}\quad \mathbb{Q}_{3,1}^{(c)}(E_{1u},a) = \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14} + \frac{\sqrt{21}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{7}$$

$$\boxed{\text{z430}}\quad \mathbb{Q}_{3,2}^{(c)}(E_{1u},a) = -\frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14} + \frac{\sqrt{21}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{7}$$

$$\boxed{\text{z431}}\quad \mathbb{Q}_{3,1}^{(c)}(E_{1u},b) = \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(s)}(B_{1u})}{58} - \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(s)}(B_{1u})}{29}$$

$$\boxed{\text{z432}}\quad \mathbb{Q}_{3,2}^{(c)}(E_{1u},b) = -\frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(s)}(B_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(s)}(B_{1u})}{29}$$

$$\boxed{\text{z433}}\quad \mathbb{Q}_{3,1}^{(c)}(E_{1u},c) = \frac{\sqrt{35}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14} - \frac{\sqrt{35}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{7}$$

$$\boxed{\text{z434}}\quad \mathbb{Q}_{3,2}^{(c)}(E_{1u},c) = -\frac{\sqrt{35}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14} - \frac{\sqrt{35}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{7}$$

$$\boxed{\text{z435}}\quad \mathbb{Q}_{5,1}^{(c)}(E_{1u},1) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2} - \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2}$$

$$\boxed{\text{z465}}\quad \mathbb{Q}_{5,2}^{(c)}(E_{1u},1) = -\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2} - \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2}$$

$$\boxed{\text{z466}}\quad \mathbb{Q}_{5,1}^{(c)}(E_{1u},2) = \frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14} + \frac{\sqrt{70}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14}$$

$$\boxed{\text{z467}}\quad \mathbb{Q}_{5,2}^{(c)}(E_{1u},2) = -\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14} + \frac{\sqrt{70}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14}$$

$$\boxed{\text{z491}}\quad \mathbb{Q}_{2,1}^{(c)}(E_{2g},a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$$

$$\boxed{\text{z492}}\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g},a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$$

$$\boxed{\text{z493}}\quad \mathbb{Q}_{2,1}^{(c)}(E_{2g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$$

$$\boxed{\text{z494}}\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$$

$\boxed{\text{z495}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},c) = -\frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$$

$\boxed{\text{z496}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},c) = -\frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$$

$\boxed{\text{z497}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},d) = \frac{\sqrt{4970}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{142} - \frac{\sqrt{4970}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{142} + \frac{\sqrt{142}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{142}$$

$\boxed{\text{z498}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},d) = -\frac{\sqrt{4970}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{142} - \frac{\sqrt{4970}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{142} + \frac{\sqrt{142}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{142}$$

$\boxed{\text{z499}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1a) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$$

$\boxed{\text{z500}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1a) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$$

$\boxed{\text{z501}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1b) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$$

$\boxed{\text{z502}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1b) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$$

$\boxed{\text{z503}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1c) = -\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$$

$\boxed{\text{z504}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1c) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$$

$\boxed{\text{z505}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},2a) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$$

$\boxed{\text{z506}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},2a) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$$

$\boxed{\text{z507}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},2b) = \frac{\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{142} - \frac{\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{142} - \frac{\sqrt{2485}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{71}$$

$\boxed{\text{z508}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},2b) = -\frac{\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{142} - \frac{\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{142} - \frac{\sqrt{2485}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{71}$$

$\boxed{\text{z613}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(s)}(B_{1u})}{2}$

$\boxed{\text{z614}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(s)}(B_{1u})}{2}$

$\boxed{\text{z615}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2}$

$\boxed{\text{z616}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},b) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2}$

$\boxed{\text{z617}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},c) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(s)}(B_{1u})}{2}$

$\boxed{\text{z618}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(s)}(B_{1u})}{2}$

$\boxed{\text{z619}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},d) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8}$

$\boxed{\text{z620}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},d) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8}$

$\boxed{\text{z621}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{2u},1) = -\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2} - \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2}$

$\boxed{\text{z622}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{2u},1) = \frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2} - \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2}$

$\boxed{\text{z623}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{2u},2) = \frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8}$

$\boxed{\text{z624}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{2u},2) = -\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8}$

- 'Sn' site-cluster : Sn
  * bra: $\langle d_u|$, $\langle d_{xz}|$, $\langle d_{yz}|$, $\langle d_{xy}|$, $\langle d_v|$
  * ket: $|d_u\rangle$, $|d_{xz}\rangle$, $|d_{yz}\rangle$, $|d_{xy}\rangle$, $|d_v\rangle$

* wyckoff: `2c`

$\boxed{\text{z7}}$ $\mathbb{Q}_0^{(c)}(A_{1g}) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z8}}$ $\mathbb{Q}_2^{(c)}(A_{1g}) = \mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z9}}$ $\mathbb{Q}_4^{(c)}(A_{1g}) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z70}}$ $\mathbb{Q}_7^{(c)}(A_{1u}) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

$\boxed{\text{z98}}$ $\mathbb{Q}_1^{(c)}(A_{2u}) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_3^{(s)}(B_{1u})$

$\boxed{\text{z138}}$ $\mathbb{Q}_4^{(c)}(B_{1g}) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z139}}$ $\mathbb{Q}_3^{(c)}(B_{1u}, a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

$\boxed{\text{z140}}$ $\mathbb{Q}_3^{(c)}(B_{1u}, b) = -\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

$\boxed{\text{z141}}$ $\mathbb{Q}_3^{(c)}(B_{1u}, c) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

$\boxed{\text{z262}}$ $\mathbb{Q}_4^{(c)}(B_{2g}) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z263}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g}) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z264}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g}) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z265}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{1g}) = \dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z266}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{1g}) = \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z267}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u}, a) = -\dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_3^{(s)}(B_{1u})}{2}$

$\boxed{\text{z379}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u}, a) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_3^{(s)}(B_{1u})}{2}$

$\boxed{\text{z407}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u}, b) = \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{3}^{(s)}(B_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{3}^{(s)}(B_{1u})}{58}$

$\boxed{\text{z436}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u}, b) = -\frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{3}^{(s)}(B_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{3}^{(s)}(B_{1u})}{58}$

$\boxed{\text{z437}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{1u}) = \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{3}^{(s)}(B_{1u})}{58} - \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{3}^{(s)}(B_{1u})}{29}$

$\boxed{\text{z438}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{1u}) = -\frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{3}^{(s)}(B_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{3}^{(s)}(B_{1u})}{29}$

$\boxed{\text{z509}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{2g}) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$

$\boxed{\text{z510}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{2g}) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$

$\boxed{\text{z511}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{2g}, 1) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$

$\boxed{\text{z512}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{2g}, 1) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$

$\boxed{\text{z513}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{2g}, 2) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$

$\boxed{\text{z514}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{2g}, 2) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$

$\boxed{\text{z625}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u}, a) = -\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(s)}(B_{1u})}{2}$

$\boxed{\text{z626}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u}, a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(s)}(B_{1u})}{2}$

$\boxed{\text{z627}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u}, b) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(s)}(B_{1u})}{2}$

$\boxed{\text{z628}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u}, b) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(s)}(B_{1u})}{2}$

- 'Mn'-'Mn' bond-cluster : `Mn;Mn_001_1`
  * bra: $\langle d_u|$, $\langle d_{xz}|$, $\langle d_{yz}|$, $\langle d_{xy}|$, $\langle d_v|$
  * ket: $|d_u\rangle$, $|d_{xz}\rangle$, $|d_{yz}\rangle$, $|d_{xy}\rangle$, $|d_v\rangle$
  * wyckoff: `6b@6h`

$$\boxed{\text{z10}}\quad \mathbb{Q}_0^{(c)}(A_{1g},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$$

$$\boxed{\text{z11}}\quad \mathbb{Q}_0^{(c)}(A_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

$$\boxed{\text{z12}}\quad \mathbb{Q}_0^{(c)}(A_{1g},c) = \mathbb{M}_1^{(a)}(A_{2g})\mathbb{M}_1^{(b)}(A_{2g})$$

$$\boxed{\text{z13}}\quad \mathbb{Q}_2^{(c)}(A_{1g},a) = \mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$$

$$\boxed{\text{z14}}\quad \mathbb{Q}_2^{(c)}(A_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

$$\boxed{\text{z15}}\quad \mathbb{Q}_2^{(c)}(A_{1g},c) = \mathbb{M}_3^{(a)}(A_{2g})\mathbb{M}_1^{(b)}(A_{2g})$$

$$\boxed{\text{z16}}\quad \mathbb{Q}_2^{(c)}(A_{1g},d) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$$

$$\boxed{\text{z17}}\quad \mathbb{Q}_4^{(c)}(A_{1g}) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$$

$$\boxed{\text{z18}}\quad \mathbb{Q}_6^{(c)}(A_{1g},2) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

$$\boxed{\text{z44}}\quad \mathbb{Q}_7^{(c)}(A_{1u}) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$$

$$\boxed{\text{z45}}\quad \mathbb{G}_0^{(c)}(A_{1u},a) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$$

$$\boxed{\text{z46}}\quad \mathbb{G}_0^{(c)}(A_{1u},b) = \mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_3^{(b)}(B_{2u})$$

$$\boxed{\text{z47}}\quad \mathbb{G}_2^{(c)}(A_{1u},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$$

$$\boxed{\text{z71}}\quad \mathbb{G}_2^{(c)}(A_{1u},b) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$$

$\boxed{\text{z72}}$ $\mathbb{G}_4^{(c)}(A_{1u}) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z73}}$ $\mathbb{Q}_6^{(c)}(A_{2g}) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z74}}$ $\mathbb{G}_1^{(c)}(A_{2g},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z75}}$ $\mathbb{G}_1^{(c)}(A_{2g},b) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z76}}$ $\mathbb{G}_3^{(c)}(A_{2g}) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z99}}$ $\mathbb{Q}_1^{(c)}(A_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z100}}$ $\mathbb{Q}_1^{(c)}(A_{2u},b) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_3^{(b)}(B_{1u})$

$\boxed{\text{z101}}$ $\mathbb{Q}_1^{(c)}(A_{2u},c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z102}}$ $\mathbb{Q}_1^{(c)}(A_{2u},d) = -\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_3^{(b)}(B_{2u})$

$\boxed{\text{z103}}$ $\mathbb{Q}_3^{(c)}(A_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z104}}$ $\mathbb{Q}_3^{(c)}(A_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z142}}$ $\mathbb{Q}_4^{(c)}(B_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z143}}$ $\mathbb{Q}_4^{(c)}(B_{1g},b) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z144}}$ $\mathbb{Q}_4^{(c)}(B_{1g},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z145}}$ $\mathbb{Q}_4^{(c)}(B_{1g},d) = \mathbb{M}_3^{(a)}(B_{2g})\mathbb{M}_1^{(b)}(A_{2g})$

$\boxed{\text{z146}}$ $\mathbb{Q}_4^{(c)}(B_{1g},e) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z147}}$ $\mathbb{G}_3^{(c)}(B_{1g}) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z148}}$ $\mathbb{Q}_3^{(c)}(B_{1u},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

$\boxed{\text{z149}}$ $\mathbb{Q}_3^{(c)}(B_{1u},b) = -\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

$\boxed{\text{z150}}$ $\mathbb{Q}_3^{(c)}(B_{1u},c) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z151}}$ $\mathbb{Q}_3^{(c)}(B_{1u},d) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

$\boxed{\text{z152}}$ $\mathbb{Q}_3^{(c)}(B_{1u},e) = -\frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58}$

$\boxed{\text{z153}}$ $\mathbb{Q}_3^{(c)}(B_{1u},f) = \mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_3^{(b)}(B_{2u})$

$\boxed{\text{z154}}$ $\mathbb{Q}_3^{(c)}(B_{1u},g) = -\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_3^{(b)}(B_{2u})$

$\boxed{\text{z155}}$ $\mathbb{Q}_3^{(c)}(B_{1u},h) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z156}}$ $\mathbb{Q}_5^{(c)}(B_{1u}) = -\frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58} - \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29}$

$\boxed{\text{z157}}$ $\mathbb{Q}_4^{(c)}(B_{2g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z158}}$ $\mathbb{Q}_4^{(c)}(B_{2g},b) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z159}}$ $\mathbb{Q}_4^{(c)}(B_{2g},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z160}}$ $\mathbb{Q}_4^{(c)}(B_{2g},d) = \mathbb{M}_3^{(a)}(B_{1g})\mathbb{M}_1^{(b)}(A_{2g})$

$\boxed{\text{z161}}$ $\mathbb{Q}_4^{(c)}(B_{2g},e) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z162}}$ $\mathbb{G}_3^{(c)}(B_{2g}) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z163}}$ $\mathbb{Q}_3^{(c)}(B_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z164}}$ $\mathbb{Q}_3^{(c)}(B_{2u},b) = \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58}$

$\boxed{\text{z165}}$ $\mathbb{Q}_3^{(c)}(B_{2u},c) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z268}}$ $\mathbb{Q}_5^{(c)}(B_{2u}) = \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29}$

$\boxed{\text{z269}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z270}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z271}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g},b) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z272}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g},b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z273}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g},c) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8}$

$\boxed{\text{z274}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} - \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8}$

$\boxed{\text{z275}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g},d) = \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{M}_1^{(b)}(A_{2g})}{2}$

$\boxed{\text{z276}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{1g},d) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{M}_{1}^{(b)}(A_{2g})}{2}$$

$\boxed{\text{z277}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{1g},e) = -\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z278}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{1g},e) = \frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z279}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{1g},f) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{M}_{1}^{(b)}(A_{2g})}{2}$$

$\boxed{\text{z280}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{1g},f) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{M}_{1}^{(b)}(A_{2g})}{2}$$

$\boxed{\text{z281}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{1g},g) = \frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8} - \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8}$$

$\boxed{\text{z282}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{1g},g) = -\frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8}$$

$\boxed{\text{z283}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z284}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z285}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},b) = -\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8}$$

$\boxed{\text{z286}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},b) = \frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8}$$

$\boxed{\text{z287}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},c) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8} - \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8}$$

$\boxed{\text{z288}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},c) = \frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8}$$

$\boxed{\text{z289}}$ $$\mathbb{Q}_{6,1}^{(c)}(E_{1g},1) = -\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z290}}$ $\mathbb{Q}_{6,2}^{(c)}(E_{1g},1) = \frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z291}}$ $\mathbb{G}_{5,1}^{(c)}(E_{1g},1) = \frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z292}}$ $\mathbb{G}_{5,2}^{(c)}(E_{1g},1) = -\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z293}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u},a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z380}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u},a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z381}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u},b) = -\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z382}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z383}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u},c) = \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}$

$\boxed{\text{z384}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u},c) = -\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}$

$\boxed{\text{z385}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u},d) = \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{58}$

$\boxed{\text{z408}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u},d) = -\frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{58}$

$\boxed{\text{z409}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u},e) = -\frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z410}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u},e) = \frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z411}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u},f) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z412}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u}, f) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z413}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{1u}, a) = \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} + \frac{\sqrt{21}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{7}$

$\boxed{\text{z439}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{1u}, a) = -\frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} + \frac{\sqrt{21}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{7}$

$\boxed{\text{z440}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{1u}, b) = \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{58} - \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{29}$

$\boxed{\text{z441}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{1u}, b) = -\frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{29}$

$\boxed{\text{z442}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{1u}, c) = \frac{\sqrt{35}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{35}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{7}$

$\boxed{\text{z443}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{1u}, c) = -\frac{\sqrt{35}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{35}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{7}$

$\boxed{\text{z444}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{1u}, d) = -\frac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{22} + \frac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{22} - \frac{\sqrt{33}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{11}$

$\boxed{\text{z445}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{1u}, d) = \frac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{22} + \frac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{22} + \frac{\sqrt{33}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{11}$

$\boxed{\text{z446}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{1u}, 1) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z447}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{1u}, 1) = -\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z468}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{1u}, 2) = \frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} + \frac{\sqrt{70}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}$

$\boxed{\text{z469}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{1u}, 2) = -\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} + \frac{\sqrt{70}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}$

$\boxed{\text{z470}}$ $\mathbb{G}_{2,1}^{(c)}(E_{1u}) = \frac{\sqrt{66}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{22} - \frac{\sqrt{66}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{22} - \frac{\sqrt{110}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{22}$

$\boxed{\text{z471}}$ $\mathbb{G}^{(c)}_{2,2}(E_{1u}) = -\frac{\sqrt{66}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{22} - \frac{\sqrt{66}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{22} + \frac{\sqrt{110}\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{22}$

$\boxed{\text{z515}}$ $\mathbb{Q}^{(c)}_{2,1}(E_{2g}, a) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{0}(A_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{2}$

$\boxed{\text{z516}}$ $\mathbb{Q}^{(c)}_{2,2}(E_{2g}, a) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{0}(A_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{2}$

$\boxed{\text{z517}}$ $\mathbb{Q}^{(c)}_{2,1}(E_{2g}, b) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(b)}_{0}(A_{1g})}{2}$

$\boxed{\text{z518}}$ $\mathbb{Q}^{(c)}_{2,2}(E_{2g}, b) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(b)}_{0}(A_{1g})}{2}$

$\boxed{\text{z519}}$ $\mathbb{Q}^{(c)}_{2,1}(E_{2g}, c) = -\frac{\sqrt{2}\mathbb{Q}^{(a)}_{2}(A_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{2}$

$\boxed{\text{z520}}$ $\mathbb{Q}^{(c)}_{2,2}(E_{2g}, c) = -\frac{\sqrt{2}\mathbb{Q}^{(a)}_{2}(A_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{2}$

$\boxed{\text{z521}}$ $\mathbb{Q}^{(c)}_{2,1}(E_{2g}, d) = \frac{\sqrt{4970}\mathbb{Q}^{(a)}_{4,1}(E_{2g}, 1)\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{142} - \frac{\sqrt{4970}\mathbb{Q}^{(a)}_{4,2}(E_{2g}, 1)\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{142} + \frac{\sqrt{142}\mathbb{Q}^{(a)}_{4}(A_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{142}$

$\boxed{\text{z522}}$ $\mathbb{Q}^{(c)}_{2,2}(E_{2g}, d) = -\frac{\sqrt{4970}\mathbb{Q}^{(a)}_{4,1}(E_{2g}, 1)\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{142} - \frac{\sqrt{4970}\mathbb{Q}^{(a)}_{4,2}(E_{2g}, 1)\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{142} + \frac{\sqrt{142}\mathbb{Q}^{(a)}_{4}(A_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{142}$

$\boxed{\text{z523}}$ $\mathbb{Q}^{(c)}_{2,1}(E_{2g}, e) = \frac{\sqrt{2}\mathbb{M}^{(a)}_{1}(A_{2g})\mathbb{T}^{(b)}_{2,2}(E_{2g})}{2}$

$\boxed{\text{z524}}$ $\mathbb{Q}^{(c)}_{2,2}(E_{2g}, e) = -\frac{\sqrt{2}\mathbb{M}^{(a)}_{1}(A_{2g})\mathbb{T}^{(b)}_{2,1}(E_{2g})}{2}$

$\boxed{\text{z525}}$ $\mathbb{Q}^{(c)}_{2,1}(E_{2g}, f) = \frac{\sqrt{2}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{M}^{(b)}_{1}(A_{2g})}{2}$

$\boxed{\text{z526}}$ $\mathbb{Q}^{(c)}_{2,2}(E_{2g}, f) = -\frac{\sqrt{2}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{M}^{(b)}_{1}(A_{2g})}{2}$

$\boxed{\text{z527}}$ $\mathbb{Q}^{(c)}_{2,1}(E_{2g}, g) = -\frac{\sqrt{2}\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{T}^{(b)}_{2,2}(E_{2g})}{2}$

$\boxed{\text{z528}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{2g}, g) = \frac{\sqrt{2}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z529}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{2g}, 1a) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z530}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{2g}, 1a) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z531}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{2g}, 1b) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z532}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{2g}, 1b) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z533}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{2g}, 1c) = -\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z534}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{2g}, 1c) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z535}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{2g}, 1d) = -\frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z536}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{2g}, 1d) = \frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z537}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{2g}, 2a) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z538}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{2g}, 2a) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z539}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{2g}, 2b) = \frac{\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142} - \frac{\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142} - \frac{\sqrt{2485}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{71}$

$\boxed{\text{z540}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{2g}, 2b) = -\frac{\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142} - \frac{\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142} - \frac{\sqrt{2485}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{71}$

$\boxed{\text{z629}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u}, a) = -\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z630}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z631}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z632}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},b) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z633}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},c) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z634}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z635}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},d) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8}$

$\boxed{\text{z636}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},d) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8}$

$\boxed{\text{z637}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},e) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z638}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},e) = -\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z639}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},f) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z640}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},f) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z641}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},g) = \frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{8} - \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{8}$

$\boxed{\text{z642}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},g) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{8} - \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{8}$

$\boxed{\text{z643}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{2u},1) = -\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z644}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{2u},1) = \frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z645}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{2u},2) = \frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8}$

$\boxed{\text{z646}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{2u},2) = -\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8}$

$\boxed{\text{z647}}$ $\mathbb{G}_{2,1}^{(c)}(E_{2u},a) = \frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z648}}$ $\mathbb{G}_{2,2}^{(c)}(E_{2u},a) = -\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z649}}$ $\mathbb{G}_{2,1}^{(c)}(E_{2u},b) = -\frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{8}$

$\boxed{\text{z650}}$ $\mathbb{G}_{2,2}^{(c)}(E_{2u},b) = \frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{8} - \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{8}$

$\boxed{\text{z651}}$ $\mathbb{G}_{4,1}^{(c)}(E_{2u},1) = -\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2} + \frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z652}}$ $\mathbb{G}_{4,2}^{(c)}(E_{2u},1) = \frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2} + \frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$

- 'Mn'-'Sn' bond-cluster : `Sn;Mn_001_1`
  * bra: $\langle d_{u}|$, $\langle d_{xz}|$, $\langle d_{yz}|$, $\langle d_{xy}|$, $\langle d_{v}|$
  * ket: $|d_{u}\rangle$, $|d_{xz}\rangle$, $|d_{yz}\rangle$, $|d_{xy}\rangle$, $|d_{v}\rangle$
  * wyckoff: `12a@12j`

$\boxed{\text{z19}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g},a) = \mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z20}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z21}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g},c) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$

$\boxed{\text{z22}}$ $\mathbb{Q}_0^{(c)}(A_{1g},d) = \mathbb{M}_1^{(a)}(A_{2g})\mathbb{M}_1^{(b)}(A_{2g})$

$\boxed{\text{z23}}$ $\mathbb{Q}_2^{(c)}(A_{1g},a) = \mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z24}}$ $\mathbb{Q}_2^{(c)}(A_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z25}}$ $\mathbb{Q}_2^{(c)}(A_{1g},c) = \mathbb{M}_3^{(a)}(A_{2g})\mathbb{M}_1^{(b)}(A_{2g})$

$\boxed{\text{z26}}$ $\mathbb{Q}_2^{(c)}(A_{1g},d) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}$

$\boxed{\text{z27}}$ $\mathbb{Q}_2^{(c)}(A_{1g},e) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2}$

$\boxed{\text{z28}}$ $\mathbb{Q}_4^{(c)}(A_{1g}) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z29}}$ $\mathbb{Q}_6^{(c)}(A_{1g},2a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$

$\boxed{\text{z30}}$ $\mathbb{Q}_6^{(c)}(A_{1g},2b) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z31}}$ $\mathbb{Q}_6^{(c)}(A_{1g},2c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$

$\boxed{\text{z48}}$ $\mathbb{Q}_7^{(c)}(A_{1u},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z49}}$ $\mathbb{Q}_7^{(c)}(A_{1u},b) = \frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{1u})}{2} + \frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_3^{(b)}(B_{2u})}{2}$

$\boxed{\text{z50}}$ $\mathbb{Q}_7^{(c)}(A_{1u},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z51}}$ $\mathbb{G}_0^{(c)}(A_{1u},a) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2}$

$\boxed{\text{z52}}$ $\mathbb{G}_0^{(c)}(A_{1u},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2}$

$\boxed{\text{z53}}$ $\mathbb{G}_0^{(c)}(A_{1u},c) = \frac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_3^{(b)}(B_{1u})}{2} + \frac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_3^{(b)}(B_{2u})}{2}$

$\boxed{\text{z54}}$ $\mathbb{G}_2^{(c)}(A_{1u},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z55}}$ $\mathbb{G}_2^{(c)}(A_{1u},b) = \frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_3^{(b)}(B_{2u})}{2}$

$\boxed{\text{z56}}$ $\mathbb{G}_2^{(c)}(A_{1u},c) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2}$

$\boxed{\text{z57}}$ $\mathbb{G}_2^{(c)}(A_{1u},d) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2}$

$\boxed{\text{z58}}$ $\mathbb{G}_4^{(c)}(A_{1u}) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z59}}$ $\mathbb{G}_6^{(c)}(A_{1u},2) = -\frac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_3^{(b)}(B_{1u})}{2} + \frac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_3^{(b)}(B_{2u})}{2}$

$\boxed{\text{z60}}$ $\mathbb{Q}_6^{(c)}(A_{2g},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_6^{(b)}(A_{2g})$

$\boxed{\text{z77}}$ $\mathbb{Q}_6^{(c)}(A_{2g},b) = -\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_6^{(b)}(A_{2g})$

$\boxed{\text{z78}}$ $\mathbb{Q}_6^{(c)}(A_{2g},c) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$

$\boxed{\text{z79}}$ $\mathbb{Q}_6^{(c)}(A_{2g},d) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_6^{(b)}(A_{2g})$

$\boxed{\text{z80}}$ $\mathbb{Q}_6^{(c)}(A_{2g},e) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z81}}$ $\mathbb{Q}_6^{(c)}(A_{2g},f) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$

$\boxed{\text{z82}}$ $\mathbb{G}_1^{(c)}(A_{2g},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z83}}$ $$\mathbb{G}_1^{(c)}(A_{2g},b) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$$

$\boxed{\text{z84}}$ $$\mathbb{G}_1^{(c)}(A_{2g},c) = \mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_0^{(b)}(A_{1g})$$

$\boxed{\text{z85}}$ $$\mathbb{G}_1^{(c)}(A_{2g},d) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}$$

$\boxed{\text{z86}}$ $$\mathbb{G}_1^{(c)}(A_{2g},e) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2}$$

$\boxed{\text{z87}}$ $$\mathbb{G}_3^{(c)}(A_{2g},a) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z88}}$ $$\mathbb{G}_3^{(c)}(A_{2g},b) = \mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_0^{(b)}(A_{1g})$$

$\boxed{\text{z105}}$ $$\mathbb{Q}_1^{(c)}(A_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$$

$\boxed{\text{z106}}$ $$\mathbb{Q}_1^{(c)}(A_{2u},b) = \frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{2u})}{2} + \frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_3^{(b)}(B_{1u})}{2}$$

$\boxed{\text{z107}}$ $$\mathbb{Q}_1^{(c)}(A_{2u},c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2}$$

$\boxed{\text{z108}}$ $$\mathbb{Q}_1^{(c)}(A_{2u},d) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2}$$

$\boxed{\text{z109}}$ $$\mathbb{Q}_1^{(c)}(A_{2u},e) = -\frac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_3^{(b)}(B_{2u})}{2} + \frac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_3^{(b)}(B_{1u})}{2}$$

$\boxed{\text{z110}}$ $$\mathbb{Q}_3^{(c)}(A_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$$

$\boxed{\text{z111}}$ $$\mathbb{Q}_3^{(c)}(A_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2}$$

$\boxed{\text{z112}}$ $$\mathbb{Q}_3^{(c)}(A_{2u},c) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2}$$

$\boxed{\text{z113}}$ $\mathbb{Q}_7^{(c)}(A_{2u},2a)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}-\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z114}}$ $\mathbb{Q}_7^{(c)}(A_{2u},2b)=\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}-\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z115}}$ $\mathbb{Q}_7^{(c)}(A_{2u},2c)=-\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}+\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z116}}$ $\mathbb{G}_6^{(c)}(A_{2u})=\frac{\sqrt{2}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}+\frac{\sqrt{2}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z166}}$ $\mathbb{Q}_4^{(c)}(B_{1g},a)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}-\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z167}}$ $\mathbb{Q}_4^{(c)}(B_{1g},b)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}-\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$

$\boxed{\text{z168}}$ $\mathbb{Q}_4^{(c)}(B_{1g},c)=\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z169}}$ $\mathbb{Q}_4^{(c)}(B_{1g},d)=\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_6^{(b)}(A_{2g})$

$\boxed{\text{z170}}$ $\mathbb{Q}_4^{(c)}(B_{1g},e)=-\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}+\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z171}}$ $\mathbb{Q}_4^{(c)}(B_{1g},f)=-\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}+\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$

$\boxed{\text{z172}}$ $\mathbb{Q}_4^{(c)}(B_{1g},g)=\mathbb{M}_3^{(a)}(B_{2g})\mathbb{M}_1^{(b)}(A_{2g})$

$\boxed{\text{z173}}$ $\mathbb{Q}_4^{(c)}(B_{1g},h)=\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}-\frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}$

$\boxed{\text{z174}}$ $\mathbb{Q}_4^{(c)}(B_{1g},i)=\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2}-\frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2}$

$\boxed{\text{z175}}$ $\mathbb{G}_3^{(c)}(B_{1g},a)=-\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}+\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}$

$\boxed{\text{z176}}$ $\mathbb{G}_3^{(c)}(B_{1g},b) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2}$

$\boxed{\text{z177}}$ $\mathbb{G}_3^{(c)}(B_{1g},c) = \mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z178}}$ $\mathbb{Q}_3^{(c)}(B_{1u},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

$\boxed{\text{z179}}$ $\mathbb{Q}_3^{(c)}(B_{1u},b) = -\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

$\boxed{\text{z180}}$ $\mathbb{Q}_3^{(c)}(B_{1u},c) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z181}}$ $\mathbb{Q}_3^{(c)}(B_{1u},d) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z182}}$ $\mathbb{Q}_3^{(c)}(B_{1u},e) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

$\boxed{\text{z183}}$ $\mathbb{Q}_3^{(c)}(B_{1u},f) = -\frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58}$

$\boxed{\text{z184}}$ $\mathbb{Q}_3^{(c)}(B_{1u},g) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z185}}$ $\mathbb{Q}_3^{(c)}(B_{1u},h) = \mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_3^{(b)}(B_{2u})$

$\boxed{\text{z186}}$ $\mathbb{Q}_3^{(c)}(B_{1u},i) = -\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_3^{(b)}(B_{2u})$

$\boxed{\text{z187}}$ $\mathbb{Q}_3^{(c)}(B_{1u},j) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2}$

$\boxed{\text{z188}}$ $\mathbb{Q}_3^{(c)}(B_{1u},k) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2}$

$\boxed{\text{z189}}$ $\mathbb{Q}_5^{(c)}(B_{1u}) = -\frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58} - \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29}$

$\boxed{\text{z190}}$ $\mathbb{Q}_9^{(c)}(B_{1u},1) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z191}}$ $$\mathbb{Q}_4^{(c)}(B_{2g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z192}}$ $$\mathbb{Q}_4^{(c)}(B_{2g},b) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$$

$\boxed{\text{z193}}$ $$\mathbb{Q}_4^{(c)}(B_{2g},c) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_0^{(b)}(A_{1g})$$

$\boxed{\text{z194}}$ $$\mathbb{Q}_4^{(c)}(B_{2g},d) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_6^{(b)}(A_{2g})$$

$\boxed{\text{z195}}$ $$\mathbb{Q}_4^{(c)}(B_{2g},e) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z196}}$ $$\mathbb{Q}_4^{(c)}(B_{2g},f) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$$

$\boxed{\text{z197}}$ $$\mathbb{Q}_4^{(c)}(B_{2g},g) = \mathbb{M}_3^{(a)}(B_{1g})\mathbb{M}_1^{(b)}(A_{2g})$$

$\boxed{\text{z198}}$ $$\mathbb{Q}_4^{(c)}(B_{2g},h) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}$$

$\boxed{\text{z199}}$ $$\mathbb{Q}_4^{(c)}(B_{2g},i) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2}$$

$\boxed{\text{z200}}$ $$\mathbb{G}_3^{(c)}(B_{2g},a) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}$$

$\boxed{\text{z201}}$ $$\mathbb{G}_3^{(c)}(B_{2g},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2}$$

$\boxed{\text{z202}}$ $$\mathbb{G}_3^{(c)}(B_{2g},c) = \mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_0^{(b)}(A_{1g})$$

$\boxed{\text{z203}}$ $$\mathbb{Q}_3^{(c)}(B_{2u},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{2u})$$

$\boxed{\text{z204}}$ $$\mathbb{Q}_3^{(c)}(B_{2u},b) = -\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{2u})$$

$\boxed{\text{z205}}$ $$\mathbb{Q}_3^{(c)}(B_{2u},c) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$$

$\boxed{\text{z206}}$ $\mathbb{Q}_3^{(c)}(B_{2u},d) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z207}}$ $\mathbb{Q}_3^{(c)}(B_{2u},e) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{2u})$

$\boxed{\text{z208}}$ $\mathbb{Q}_3^{(c)}(B_{2u},f) = \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58}$

$\boxed{\text{z209}}$ $\mathbb{Q}_3^{(c)}(B_{2u},g) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z210}}$ $\mathbb{Q}_3^{(c)}(B_{2u},h) = -\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_3^{(b)}(B_{1u})$

$\boxed{\text{z211}}$ $\mathbb{Q}_3^{(c)}(B_{2u},i) = \mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_3^{(b)}(B_{1u})$

$\boxed{\text{z212}}$ $\mathbb{Q}_3^{(c)}(B_{2u},j) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2}$

$\boxed{\text{z213}}$ $\mathbb{Q}_3^{(c)}(B_{2u},k) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2}$

$\boxed{\text{z294}}$ $\mathbb{Q}_5^{(c)}(B_{2u}) = \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29}$

$\boxed{\text{z295}}$ $\mathbb{Q}_9^{(c)}(B_{2u},1) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z296}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z297}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z298}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g},b) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z299}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g},b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z300}}$ $$\mathbb{Q}^{(c)}_{2,1}(E_{1g},c)=\frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{8}-\frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{8}+\frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{8}+\frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{8}$$

$\boxed{\text{z301}}$ $$\mathbb{Q}^{(c)}_{2,2}(E_{1g},c)=-\frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{8}-\frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{8}-\frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{8}+\frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{8}$$

$\boxed{\text{z302}}$ $$\mathbb{Q}^{(c)}_{2,1}(E_{1g},d)=\frac{\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{4,2}(E_{2g},1)}{2}-\frac{\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{4,1}(E_{2g},1)}{2}$$

$\boxed{\text{z303}}$ $$\mathbb{Q}^{(c)}_{2,2}(E_{1g},d)=-\frac{\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{4,1}(E_{2g},1)}{2}-\frac{\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{4,2}(E_{2g},1)}{2}$$

$\boxed{\text{z304}}$ $$\mathbb{Q}^{(c)}_{2,1}(E_{1g},e)=\frac{\sqrt{2}\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{M}^{(b)}_{1}(A_{2g})}{2}$$

$\boxed{\text{z305}}$ $$\mathbb{Q}^{(c)}_{2,2}(E_{1g},e)=-\frac{\sqrt{2}\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{M}^{(b)}_{1}(A_{2g})}{2}$$

$\boxed{\text{z306}}$ $$\mathbb{Q}^{(c)}_{2,1}(E_{1g},f)=-\frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{2,1}(E_{2g},a)}{2}+\frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{2,2}(E_{2g},a)}{2}$$

$\boxed{\text{z307}}$ $$\mathbb{Q}^{(c)}_{2,2}(E_{1g},f)=\frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{2,2}(E_{2g},a)}{2}+\frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{2,1}(E_{2g},a)}{2}$$

$\boxed{\text{z308}}$ $$\mathbb{Q}^{(c)}_{2,1}(E_{1g},g)=-\frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{2,1}(E_{2g},b)}{2}+\frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{2,2}(E_{2g},b)}{2}$$

$\boxed{\text{z309}}$ $$\mathbb{Q}^{(c)}_{2,2}(E_{1g},g)=\frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{2,2}(E_{2g},b)}{2}+\frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{2,1}(E_{2g},b)}{2}$$

$\boxed{\text{z310}}$ $$\mathbb{Q}^{(c)}_{2,1}(E_{1g},h)=\frac{\sqrt{2}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{M}^{(b)}_{1}(A_{2g})}{2}$$

$\boxed{\text{z311}}$ $$\mathbb{Q}^{(c)}_{2,2}(E_{1g},h)=-\frac{\sqrt{2}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{M}^{(b)}_{1}(A_{2g})}{2}$$

$\boxed{\text{z312}}$ $$\mathbb{Q}^{(c)}_{2,1}(E_{1g},i)=\frac{\sqrt{6}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{2,1}(E_{2g},a)}{8}-\frac{\sqrt{6}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{2,2}(E_{2g},a)}{8}-\frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{2,2}(E_{2g},a)}{8}+\frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{2,1}(E_{2g},a)}{8}$$

$\boxed{\text{z313}}$ $$\mathbb{Q}^{(c)}_{2,2}(E_{1g},i)=-\frac{\sqrt{6}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{2,2}(E_{2g},a)}{8}-\frac{\sqrt{6}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{2,1}(E_{2g},a)}{8}+\frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{2,1}(E_{2g},a)}{8}+\frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{2,2}(E_{2g},a)}{8}$$

$\boxed{\text{z314}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g}, j) = \frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, b)}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, b)}{8} - \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, b)}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, b)}{8}$

$\boxed{\text{z315}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g}, j) = -\frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, b)}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, b)}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, b)}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, b)}{8}$

$\boxed{\text{z316}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{1g}, a) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z317}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{1g}, a) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z318}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{1g}, b) = -\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8}$

$\boxed{\text{z319}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{1g}, b) = \frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8}$

$\boxed{\text{z320}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{1g}, c) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, a)}{8} + \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, a)}{8} - \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, a)}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, a)}{8}$

$\boxed{\text{z321}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{1g}, c) = \frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, a)}{8} + \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, a)}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, a)}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, a)}{8}$

$\boxed{\text{z322}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{1g}, d) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, b)}{8} + \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, b)}{8} - \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, b)}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, b)}{8}$

$\boxed{\text{z323}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{1g}, d) = \frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, b)}{8} + \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, b)}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, b)}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, b)}{8}$

$\boxed{\text{z324}}$ $\mathbb{Q}_{6,1}^{(c)}(E_{1g}, 1a) = -\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$

$\boxed{\text{z325}}$ $\mathbb{Q}_{6,2}^{(c)}(E_{1g}, 1a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$

$\boxed{\text{z326}}$ $\mathbb{Q}_{6,1}^{(c)}(E_{1g}, 1b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g}, 1)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g}, 1)}{2}$

$\boxed{\text{z327}}$ $\mathbb{Q}_{6,2}^{(c)}(E_{1g}, 1b) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g}, 1)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g}, 1)}{2}$

$\boxed{\text{z328}}$ $$\mathbb{Q}_{6,1}^{(c)}(E_{1g}, 1c) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$$

$\boxed{\text{z329}}$ $$\mathbb{Q}_{6,2}^{(c)}(E_{1g}, 1c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$$

$\boxed{\text{z330}}$ $$\mathbb{Q}_{6,1}^{(c)}(E_{1g}, 1d) = -\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z331}}$ $$\mathbb{Q}_{6,2}^{(c)}(E_{1g}, 1d) = \frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z332}}$ $$\mathbb{Q}_{6,1}^{(c)}(E_{1g}, 1e) = -\frac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g}, 1)}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g}, 1)}{2}$$

$\boxed{\text{z333}}$ $$\mathbb{Q}_{6,2}^{(c)}(E_{1g}, 1e) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g}, 1)}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g}, 1)}{2}$$

$\boxed{\text{z334}}$ $$\mathbb{Q}_{8,1}^{(c)}(E_{1g}, 1) = \frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g}, 1)}{2} + \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{4,1}^{(b)}(E_{2g}, 1)}{2}$$

$\boxed{\text{z335}}$ $$\mathbb{Q}_{8,2}^{(c)}(E_{1g}, 1) = -\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g}, 1)}{2} + \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{4,2}^{(b)}(E_{2g}, 1)}{2}$$

$\boxed{\text{z336}}$ $$\mathbb{G}_{1,1}^{(c)}(E_{1g}) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z337}}$ $$\mathbb{G}_{1,2}^{(c)}(E_{1g}) = \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z338}}$ $$\mathbb{G}_{3,1}^{(c)}(E_{1g}) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z339}}$ $$\mathbb{G}_{3,2}^{(c)}(E_{1g}) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z340}}$ $$\mathbb{G}_{5,1}^{(c)}(E_{1g}, 1a) = \frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, a)}{2} + \frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, a)}{2}$$

$\boxed{\text{z341}}$ $$\mathbb{G}_{5,2}^{(c)}(E_{1g}, 1a) = -\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, a)}{2} + \frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, a)}{2}$$

$\boxed{\text{z342}}$ $\mathbb{G}_{5,1}^{(c)}(E_{1g}, 1b) = \frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, b)}{2} + \frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, b)}{2}$

$\boxed{\text{z343}}$ $\mathbb{G}_{5,2}^{(c)}(E_{1g}, 1b) = -\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, b)}{2} + \frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, b)}{2}$

$\boxed{\text{z344}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u}, a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z345}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u}, a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z386}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u}, b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z387}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u}, b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z388}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u}, c) = \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}$

$\boxed{\text{z389}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u}, c) = -\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}$

$\boxed{\text{z390}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u}, d) = \frac{\sqrt{203}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{3}^{(b)}(B_{2u})}{29} - \frac{\sqrt{29}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{3}^{(b)}(B_{2u})}{58} + \frac{\sqrt{203}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{29} + \frac{\sqrt{29}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{58}$

$\boxed{\text{z391}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u}, d) = -\frac{\sqrt{203}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{29} - \frac{\sqrt{29}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{58} + \frac{\sqrt{203}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{3}^{(b)}(B_{2u})}{29} - \frac{\sqrt{29}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{3}^{(b)}(B_{2u})}{58}$

$\boxed{\text{z392}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u}, e) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{5,1}^{(b)}(E_{1u}, 1)}{2} - \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{5,2}^{(b)}(E_{1u}, 1)}{2}$

$\boxed{\text{z393}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u}, e) = -\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{5,2}^{(b)}(E_{1u}, 1)}{2} - \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{5,1}^{(b)}(E_{1u}, 1)}{2}$

$\boxed{\text{z394}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u}, f) = -\frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u}, a)}{2}$

$\boxed{\text{z395}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u}, f) = \frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u}, a)}{2}$

$\boxed{\text{z396}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u},g)=-\frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2}$

$\boxed{\text{z397}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u},g)=\frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2}$

$\boxed{\text{z414}}$ $\mathbb{Q}_{1,1}^{(c)}(E_{1u},h)=\frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}-\frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z415}}$ $\mathbb{Q}_{1,2}^{(c)}(E_{1u},h)=\frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}+\frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z416}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{1u},a)=\frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}-\frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}+\frac{\sqrt{21}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{7}$

$\boxed{\text{z417}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{1u},a)=-\frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}-\frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}+\frac{\sqrt{21}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{7}$

$\boxed{\text{z418}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{1u},b)=\frac{\sqrt{29}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{2u})}{58}+\frac{\sqrt{203}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{2u})}{29}+\frac{\sqrt{29}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{58}-\frac{\sqrt{203}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{29}$

$\boxed{\text{z419}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{1u},b)=-\frac{\sqrt{29}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{58}+\frac{\sqrt{203}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{29}+\frac{\sqrt{29}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{2u})}{58}+\frac{\sqrt{203}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{2u})}{29}$

$\boxed{\text{z420}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{1u},c)=\frac{\sqrt{35}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}-\frac{\sqrt{35}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}-\frac{\sqrt{7}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{7}$

$\boxed{\text{z421}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{1u},c)=-\frac{\sqrt{35}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}-\frac{\sqrt{35}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}-\frac{\sqrt{7}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{7}$

$\boxed{\text{z422}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{1u},d)=-\frac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{22}+\frac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{22}-\frac{\sqrt{33}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{11}$

$\boxed{\text{z423}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{1u},d)=\frac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{22}+\frac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{22}+\frac{\sqrt{33}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{11}$

$\boxed{\text{z424}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{1u},e)=-\frac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{22}+\frac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{22}-\frac{\sqrt{33}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{11}$

$\boxed{\text{z425}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{1u},e)=\frac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{22}+\frac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{22}+\frac{\sqrt{33}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{11}$

$\boxed{\text{z448}}$ $$\mathbb{Q}^{(c)}_{5,1}(E_{1u},1a)=\frac{\sqrt{2}\mathbb{Q}^{(a)}_{0}(A_{1g})\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2}$$

$\boxed{\text{z449}}$ $$\mathbb{Q}^{(c)}_{5,2}(E_{1u},1a)=\frac{\sqrt{2}\mathbb{Q}^{(a)}_{0}(A_{1g})\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2}$$

$\boxed{\text{z450}}$ $$\mathbb{Q}^{(c)}_{5,1}(E_{1u},1b)=\frac{\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(b)}_{3}(B_{2u})}{2}+\frac{\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(b)}_{3}(B_{1u})}{2}$$

$\boxed{\text{z451}}$ $$\mathbb{Q}^{(c)}_{5,2}(E_{1u},1b)=-\frac{\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(b)}_{3}(B_{1u})}{2}+\frac{\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(b)}_{3}(B_{2u})}{2}$$

$\boxed{\text{z452}}$ $$\mathbb{Q}^{(c)}_{5,1}(E_{1u},1c)=-\frac{\sqrt{2}\mathbb{Q}^{(a)}_{2}(A_{1g})\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2}$$

$\boxed{\text{z453}}$ $$\mathbb{Q}^{(c)}_{5,2}(E_{1u},1c)=-\frac{\sqrt{2}\mathbb{Q}^{(a)}_{2}(A_{1g})\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2}$$

$\boxed{\text{z454}}$ $$\mathbb{Q}^{(c)}_{5,1}(E_{1u},1d)=-\frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{3}(B_{2u})}{2}-\frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{3}(B_{1u})}{2}$$

$\boxed{\text{z455}}$ $$\mathbb{Q}^{(c)}_{5,2}(E_{1u},1d)=\frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{3}(B_{1u})}{2}-\frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{3}(B_{2u})}{2}$$

$\boxed{\text{z456}}$ $$\mathbb{Q}^{(c)}_{5,1}(E_{1u},1e)=\frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{2}-\frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{2}$$

$\boxed{\text{z457}}$ $$\mathbb{Q}^{(c)}_{5,2}(E_{1u},1e)=-\frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{2}-\frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{2}$$

$\boxed{\text{z458}}$ $$\mathbb{Q}^{(c)}_{5,1}(E_{1u},1f)=\frac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(A_{1g})\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2}$$

$\boxed{\text{z459}}$ $$\mathbb{Q}^{(c)}_{5,2}(E_{1u},1f)=\frac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(A_{1g})\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2}$$

$\boxed{\text{z460}}$ $$\mathbb{Q}^{(c)}_{5,1}(E_{1u},1g)=-\frac{\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{3}(B_{2u})}{2}-\frac{\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{3}(B_{1u})}{2}$$

$\boxed{\text{z472}}$ $$\mathbb{Q}^{(c)}_{5,2}(E_{1u},1g)=\frac{\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{3}(B_{1u})}{2}-\frac{\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{3}(B_{2u})}{2}$$

$\boxed{\text{z473}}$ $$\mathbb{Q}_{5,1}^{(c)}(E_{1u},2)=\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}-\frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}+\frac{\sqrt{70}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}$$

$\boxed{\text{z474}}$ $$\mathbb{Q}_{5,2}^{(c)}(E_{1u},2)=-\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}-\frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}+\frac{\sqrt{70}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}$$

$\boxed{\text{z475}}$ $$\mathbb{Q}_{7,1}^{(c)}(E_{1u},1a)=\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}-\frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$$

$\boxed{\text{z476}}$ $$\mathbb{Q}_{7,2}^{(c)}(E_{1u},1a)=-\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}-\frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$$

$\boxed{\text{z477}}$ $$\mathbb{Q}_{7,1}^{(c)}(E_{1u},1b)=\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}-\frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$$

$\boxed{\text{z478}}$ $$\mathbb{Q}_{7,2}^{(c)}(E_{1u},1b)=\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}+\frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z479}}$ $$\mathbb{Q}_{7,1}^{(c)}(E_{1u},1c)=-\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}+\frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$$

$\boxed{\text{z480}}$ $$\mathbb{Q}_{7,2}^{(c)}(E_{1u},1c)=\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}+\frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$$

$\boxed{\text{z481}}$ $$\mathbb{G}_{2,1}^{(c)}(E_{1u},a)=\frac{\sqrt{66}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{22}-\frac{\sqrt{66}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{22}-\frac{\sqrt{110}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{22}$$

$\boxed{\text{z482}}$ $$\mathbb{G}_{2,2}^{(c)}(E_{1u},a)=-\frac{\sqrt{66}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{22}-\frac{\sqrt{66}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{22}+\frac{\sqrt{110}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{22}$$

$\boxed{\text{z483}}$ $$\mathbb{G}_{2,1}^{(c)}(E_{1u},b)=\frac{\sqrt{66}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{22}-\frac{\sqrt{66}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{22}-\frac{\sqrt{110}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{22}$$

$\boxed{\text{z484}}$ $$\mathbb{G}_{2,2}^{(c)}(E_{1u},b)=-\frac{\sqrt{66}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{22}-\frac{\sqrt{66}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{22}+\frac{\sqrt{110}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{22}$$

$\boxed{\text{z541}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z542}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z543}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{2g},b)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z544}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{2g},b)=\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z545}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{2g},c)=-\frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z546}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{2g},c)=-\frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z547}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{2g},d)=\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}-\frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$

$\boxed{\text{z548}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{2g},d)=-\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}-\frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$

$\boxed{\text{z549}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{2g},e)=\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$

$\boxed{\text{z550}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{2g},e)=-\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$

$\boxed{\text{z551}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{2g},f)=\frac{\sqrt{4970}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142}-\frac{\sqrt{4970}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142}+\frac{\sqrt{142}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142}$

$\boxed{\text{z552}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{2g},f)=-\frac{\sqrt{4970}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142}-\frac{\sqrt{4970}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142}+\frac{\sqrt{142}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142}$

$\boxed{\text{z553}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{2g},g)=-\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}+\frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$

$\boxed{\text{z554}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{2g},g)=\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}+\frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$

$\boxed{\text{z555}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{2g},h)=\frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}$

$\boxed{\text{z556}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{2g},h)=-\frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}$

$\boxed{\text{z557}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{2g}, i) = \frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, b)}{2}$$

$\boxed{\text{z558}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{2g}, i) = -\frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, b)}{2}$$

$\boxed{\text{z559}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{2g}, j) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{M}_{1}^{(b)}(A_{2g})}{2}$$

$\boxed{\text{z560}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{2g}, j) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{M}_{1}^{(b)}(A_{2g})}{2}$$

$\boxed{\text{z561}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{2g}, k) = -\frac{\sqrt{2}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, a)}{2}$$

$\boxed{\text{z562}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{2g}, k) = \frac{\sqrt{2}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, a)}{2}$$

$\boxed{\text{z563}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{2g}, l) = -\frac{\sqrt{2}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, b)}{2}$$

$\boxed{\text{z564}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{2g}, l) = \frac{\sqrt{2}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, b)}{2}$$

$\boxed{\text{z565}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g}, 1a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g}, 1)}{2}$$

$\boxed{\text{z566}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g}, 1a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g}, 1)}{2}$$

$\boxed{\text{z567}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g}, 1b) = -\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$$

$\boxed{\text{z568}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g}, 1b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$$

$\boxed{\text{z569}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g}, 1c) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z570}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g}, 1c) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z571}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1d) = -\frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$$

$\boxed{\text{z572}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1d) = -\frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$$

$\boxed{\text{z573}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1e) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z574}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1e) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z575}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1f) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$$

$\boxed{\text{z576}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1f) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$$

$\boxed{\text{z577}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1g) = -\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z578}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1g) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z579}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1h) = \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$$

$\boxed{\text{z580}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1h) = \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$$

$\boxed{\text{z581}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1i) = -\frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2} + \frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}$$

$\boxed{\text{z582}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1i) = \frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2} + \frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}$$

$\boxed{\text{z583}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1j) = -\frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2} + \frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2}$$

$\boxed{\text{z584}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1j) = \frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2} + \frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2}$$

$\boxed{\text{z585}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},2a) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z586}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},2a) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z587}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},2b) = \frac{\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142} - \frac{\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142} - \frac{\sqrt{2485}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{71}$$

$\boxed{\text{z588}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},2b) = -\frac{\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142} - \frac{\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142} - \frac{\sqrt{2485}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{71}$$

$\boxed{\text{z589}}$ $$\mathbb{Q}_{8,1}^{(c)}(E_{2g},1) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2} - \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$$

$\boxed{\text{z590}}$ $$\mathbb{Q}_{8,2}^{(c)}(E_{2g},1) = -\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2} - \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$$

$\boxed{\text{z591}}$ $$\mathbb{G}_{3,1}^{(c)}(E_{2g}) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z592}}$ $$\mathbb{G}_{3,2}^{(c)}(E_{2g}) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z653}}$ $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},a) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$$

$\boxed{\text{z654}}$ $$\mathbb{Q}_{3,2}^{(c)}(E_{2u},a) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z655}}$ $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$$

$\boxed{\text{z656}}$ $$\mathbb{Q}_{3,2}^{(c)}(E_{2u},b) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$$

$\boxed{\text{z657}}$ $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},c) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$$

$\boxed{\text{z658}}$ $$\mathbb{Q}_{3,2}^{(c)}(E_{2u},c) = -\frac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z659}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},d) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8}$

$\boxed{\text{z660}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},d) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8}$

$\boxed{\text{z661}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},e) = -\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2} - \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z662}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},e) = \frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2} - \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z663}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},f) = -\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2} - \frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z664}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},f) = \frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2} - \frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z665}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},g) = \frac{\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2} + \frac{\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z666}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},g) = -\frac{\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2} + \frac{\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z667}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},h) = \frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{8} - \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{8}$

$\boxed{\text{z668}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},h) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{8} - \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{8} - \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{8}$

$\boxed{\text{z669}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},i) = \frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{8} - \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{8}$

$\boxed{\text{z670}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},i) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{8} - \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{8} - \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{8}$

$\boxed{\text{z671}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{2u},1a) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z672}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{2u},1a) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z673}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{2u},1b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z674}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{2u},1b) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z675}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{2u},1c) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2} - \frac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z676}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{2u},1c) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z677}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{2u},1d) = -\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z678}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{2u},1d) = \frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z679}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{2u},1e) = -\frac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z680}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{2u},1e) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z681}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{2u},1f) = -\frac{\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2} + \frac{\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z682}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{2u},1f) = -\frac{\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2} - \frac{\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z683}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{2u},2) = \frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8}$

$\boxed{\text{z684}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{2u},2) = -\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8}$

$\boxed{\text{z685}}$ $\mathbb{Q}_{9,1}^{(c)}(E_{2u},1) = -\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2} + \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z686}}$ $\mathbb{Q}_{9,2}^{(c)}(E_{2u},1) = \frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2} + \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z687}}$ $$\mathbb{G}_{2,1}^{(c)}(E_{2u},a)=\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2}-\frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2}$$

$\boxed{\text{z688}}$ $$\mathbb{G}_{2,2}^{(c)}(E_{2u},a)=-\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2}-\frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2}$$

$\boxed{\text{z689}}$ $$\mathbb{G}_{2,1}^{(c)}(E_{2u},b)=\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2}-\frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2}$$

$\boxed{\text{z690}}$ $$\mathbb{G}_{2,2}^{(c)}(E_{2u},b)=-\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2}-\frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2}$$

$\boxed{\text{z691}}$ $$\mathbb{G}_{2,1}^{(c)}(E_{2u},c)=-\frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{8}+\frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{8}+\frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{8}+\frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{8}$$

$\boxed{\text{z692}}$ $$\mathbb{G}_{2,2}^{(c)}(E_{2u},c)=\frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{8}+\frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{8}-\frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{8}+\frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{8}$$

$\boxed{\text{z693}}$ $$\mathbb{G}_{2,1}^{(c)}(E_{2u},d)=-\frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{8}+\frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{8}+\frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{8}+\frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{8}$$

$\boxed{\text{z694}}$ $$\mathbb{G}_{2,2}^{(c)}(E_{2u},d)=\frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{8}+\frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{8}-\frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{8}+\frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{8}$$

$\boxed{\text{z695}}$ $$\mathbb{G}_{4,1}^{(c)}(E_{2u},1a)=\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}-\frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$$

$\boxed{\text{z696}}$ $$\mathbb{G}_{4,2}^{(c)}(E_{2u},1a)=\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}+\frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z697}}$ $$\mathbb{G}_{4,1}^{(c)}(E_{2u},1b)=-\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2}$$

$\boxed{\text{z698}}$ $$\mathbb{G}_{4,2}^{(c)}(E_{2u},1b)=\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2}$$

$\boxed{\text{z699}}$ $$\mathbb{G}_{4,1}^{(c)}(E_{2u},1c)=-\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2}$$

$\boxed{\text{z700}}$ $$\mathbb{G}_{4,2}^{(c)}(E_{2u},1c)=\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2}$$

- 'Sn'-'Sn' bond-cluster : `Sn;Sn_001_1`
  * bra: $\langle d_u|$, $\langle d_{xz}|$, $\langle d_{yz}|$, $\langle d_{xy}|$, $\langle d_v|$
  * ket: $|d_u\rangle$, $|d_{xz}\rangle$, $|d_{yz}\rangle$, $|d_{xy}\rangle$, $|d_v\rangle$
  * wyckoff: `6a@6g`

z32 $\mathbb{Q}_0^{(c)}(A_{1g},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

z33 $\mathbb{Q}_0^{(c)}(A_{1g},b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2} + \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z34 $\mathbb{Q}_0^{(c)}(A_{1g},c) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_4^{(b)}(B_{2g})$

z35 $\mathbb{Q}_2^{(c)}(A_{1g},a) = \mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

z36 $\mathbb{Q}_2^{(c)}(A_{1g},b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2} - \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z37 $\mathbb{Q}_2^{(c)}(A_{1g},c) = \frac{\sqrt{3}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{3} + \frac{\sqrt{6}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{6} + \frac{\sqrt{3}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{3} + \frac{\sqrt{6}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{6}$

z38 $\mathbb{Q}_4^{(c)}(A_{1g},a) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

z39 $\mathbb{Q}_4^{(c)}(A_{1g},b) = \frac{\sqrt{6}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{6} - \frac{\sqrt{3}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{3} + \frac{\sqrt{6}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{6} - \frac{\sqrt{3}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{3}$

z40 $\mathbb{Q}_6^{(c)}(A_{1g},2) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z61 $\mathbb{G}_0^{(c)}(A_{1u},a) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$

z62 $\mathbb{G}_0^{(c)}(A_{1u},b) = \mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_3^{(b)}(B_{1u})$

z63 $\mathbb{G}_2^{(c)}(A_{1u},a) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$

z64 $\mathbb{G}_2^{(c)}(A_{1u},b) = \frac{\sqrt{14}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{7} + \frac{\sqrt{14}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{7} + \frac{\sqrt{21}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{7}$

$\boxed{\text{z65}}$ $$\mathbb{G}_2^{(c)}(A_{1u},c) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}$$

$\boxed{\text{z66}}$ $$\mathbb{G}_4^{(c)}(A_{1u}) = -\frac{\sqrt{42}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{42}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{14} + \frac{2\sqrt{7}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{7}$$

$\boxed{\text{z89}}$ $$\mathbb{Q}_6^{(c)}(A_{2g},a) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_4^{(b)}(B_{2g})$$

$\boxed{\text{z90}}$ $$\mathbb{Q}_6^{(c)}(A_{2g},b) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z91}}$ $$\mathbb{G}_1^{(c)}(A_{2g}) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{10} - \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{5} - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{5}$$

$\boxed{\text{z92}}$ $$\mathbb{G}_3^{(c)}(A_{2g},a) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{5} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{10} - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{5} - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{10}$$

$\boxed{\text{z93}}$ $$\mathbb{G}_3^{(c)}(A_{2g},b) = \frac{\sqrt{6}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{6} - \frac{\sqrt{3}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{3} - \frac{\sqrt{6}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{6} + \frac{\sqrt{3}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{3}$$

$\boxed{\text{z94}}$ $$\mathbb{G}_5^{(c)}(A_{2g}) = \frac{\sqrt{3}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{3} + \frac{\sqrt{6}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{6} - \frac{\sqrt{3}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{3} - \frac{\sqrt{6}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{6}$$

$\boxed{\text{z117}}$ $$\mathbb{Q}_1^{(c)}(A_{2u},a) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$$

$\boxed{\text{z118}}$ $$\mathbb{Q}_1^{(c)}(A_{2u},b) = \mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_3^{(b)}(B_{1u})$$

$\boxed{\text{z119}}$ $$\mathbb{Q}_1^{(c)}(A_{2u},c) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}$$

$\boxed{\text{z120}}$ $$\mathbb{Q}_3^{(c)}(A_{2u}) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$$

$\boxed{\text{z121}}$ $$\mathbb{Q}_4^{(c)}(B_{1g},a) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} - \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2}$$

$\boxed{\text{z122}}$ $$\mathbb{Q}_4^{(c)}(B_{1g},b) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$$

$\boxed{\text{z123}}$ $\mathbb{Q}_4^{(c)}(B_{1g},c) = -\frac{3\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{71} - \frac{\sqrt{994}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{71} - \frac{5\sqrt{142}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{142} + \frac{3\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{71} + \frac{\sqrt{994}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{71} + \frac{5\sqrt{142}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{142}$

$\boxed{\text{z124}}$ $\mathbb{Q}_6^{(c)}(B_{1g}) = \frac{7\sqrt{497}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{355} + \frac{9\sqrt{142}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{710} - \frac{6\sqrt{994}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{355} - \frac{7\sqrt{497}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{355} - \frac{9\sqrt{142}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{710} + \frac{6\sqrt{994}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{355}$

$\boxed{\text{z125}}$ $\mathbb{G}_3^{(c)}(B_{1g},a) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2}$

$\boxed{\text{z214}}$ $\mathbb{G}_3^{(c)}(B_{1g},b) = -\frac{3\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{10} + \frac{\sqrt{7}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{5} - \frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{5} + \frac{3\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{10} - \frac{\sqrt{7}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{5} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{5}$

$\boxed{\text{z215}}$ $\mathbb{Q}_3^{(c)}(B_{1u},a) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}$

$\boxed{\text{z216}}$ $\mathbb{Q}_3^{(c)}(B_{1u},b) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{4} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{4} - \frac{\sqrt{3}\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{2}$

$\boxed{\text{z217}}$ $\mathbb{Q}_3^{(c)}(B_{1u},c) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}$

$\boxed{\text{z218}}$ $\mathbb{G}_4^{(c)}(B_{1u}) = -\frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{4} + \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{4} + \frac{\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{2}$

$\boxed{\text{z219}}$ $\mathbb{Q}_4^{(c)}(B_{2g},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_4^{(b)}(B_{2g})$

$\boxed{\text{z220}}$ $\mathbb{Q}_4^{(c)}(B_{2g},b) = -\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_4^{(b)}(B_{2g})$

$\boxed{\text{z221}}$ $\mathbb{Q}_4^{(c)}(B_{2g},c) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2}$

$\boxed{\text{z222}}$ $\mathbb{Q}_4^{(c)}(B_{2g},d) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z223}}$ $\mathbb{Q}_4^{(c)}(B_{2g},e) = -\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_4^{(b)}(B_{2g})$

$\boxed{\text{z224}}$ $$\mathbb{Q}_4^{(c)}(B_{2g},f) = -\frac{3\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{71} - \frac{\sqrt{994}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{71} + \frac{5\sqrt{142}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{142} - \frac{3\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{71} - \frac{\sqrt{994}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{71} + \frac{5\sqrt{142}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{142}$$

$\boxed{\text{z225}}$ $$\mathbb{Q}_6^{(c)}(B_{2g}) = \frac{7\sqrt{497}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{355} + \frac{9\sqrt{142}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{710} + \frac{6\sqrt{994}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{355} + \frac{7\sqrt{497}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{355} + \frac{9\sqrt{142}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{710} + \frac{6\sqrt{994}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{355}$$

$\boxed{\text{z226}}$ $$\mathbb{G}_3^{(c)}(B_{2g},a) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2}$$

$\boxed{\text{z227}}$ $$\mathbb{G}_3^{(c)}(B_{2g},b) = \frac{3\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{10} - \frac{\sqrt{7}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{5} - \frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{5} + \frac{3\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{10} - \frac{\sqrt{7}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{5} - \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{5}$$

$\boxed{\text{z228}}$ $$\mathbb{Q}_3^{(c)}(B_{2u},a) = -\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_3^{(b)}(B_{1u})$$

$\boxed{\text{z229}}$ $$\mathbb{Q}_3^{(c)}(B_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}$$

$\boxed{\text{z230}}$ $$\mathbb{Q}_3^{(c)}(B_{2u},c) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{4} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{4} + \frac{\sqrt{3}\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_1^{(b)}(A_{2u})}{2}$$

$\boxed{\text{z231}}$ $$\mathbb{Q}_3^{(c)}(B_{2u},d) = \mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_3^{(b)}(B_{1u})$$

$\boxed{\text{z232}}$ $$\mathbb{Q}_3^{(c)}(B_{2u},e) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}$$

$\boxed{\text{z233}}$ $$\mathbb{G}_4^{(c)}(B_{2u}) = \frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{4} + \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{4} + \frac{\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_1^{(b)}(A_{2u})}{2}$$

$\boxed{\text{z234}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2}$$

$\boxed{\text{z235}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2}$$

$\boxed{\text{z236}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_0^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z237}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g},b)=\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z238}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g},c)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{4}^{(b)}(B_{2g})}{2}$

$\boxed{\text{z239}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g},c)=\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{4}^{(b)}(B_{2g})}{2}$

$\boxed{\text{z240}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g},d)=-\frac{\sqrt{78}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{26}-\frac{\sqrt{78}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{26}+\frac{\sqrt{78}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{26}+\frac{\sqrt{78}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{26}+\frac{\sqrt{26}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{26}$

$\boxed{\text{z241}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g},d)=\frac{\sqrt{78}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{26}+\frac{\sqrt{78}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{26}+\frac{\sqrt{78}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{26}+\frac{\sqrt{78}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{26}+\frac{\sqrt{26}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{26}$

$\boxed{\text{z242}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g},e)=-\frac{\sqrt{742}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{4}^{(b)}(B_{2g})}{53}+\frac{5\sqrt{106}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{4}^{(b)}(B_{2g})}{106}$

$\boxed{\text{z243}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g},e)=-\frac{\sqrt{742}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{4}^{(b)}(B_{2g})}{53}+\frac{5\sqrt{106}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{4}^{(b)}(B_{2g})}{106}$

$\boxed{\text{z346}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{1g},f)=\frac{\sqrt{30}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{48}-\frac{\sqrt{15}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{12}-\frac{\sqrt{30}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{48}+\frac{\sqrt{15}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{12}$
$-\frac{\sqrt{3}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{6}+\frac{\sqrt{210}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{48}+\frac{\sqrt{210}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{48}$

$\boxed{\text{z347}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{1g},f)=-\frac{\sqrt{30}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{48}+\frac{\sqrt{15}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{12}-\frac{\sqrt{30}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{48}$
$+\frac{\sqrt{15}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{12}-\frac{\sqrt{3}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{6}-\frac{\sqrt{210}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{48}+\frac{\sqrt{210}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{48}$

$\boxed{\text{z348}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{1g},a)=\frac{\sqrt{26}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{52}+\frac{\sqrt{26}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{52}-\frac{\sqrt{26}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{52}-\frac{\sqrt{26}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{52}+\frac{\sqrt{78}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{13}$

$\boxed{\text{z349}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{1g},a)=-\frac{\sqrt{26}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{52}-\frac{\sqrt{26}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{52}-\frac{\sqrt{26}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{52}-\frac{\sqrt{26}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{52}+\frac{\sqrt{78}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{13}$

$\boxed{\text{z350}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{1g},b)=\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

z351 $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z352 $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},c) = \frac{5\sqrt{106}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{4}^{(b)}(B_{2g})}{106} + \frac{\sqrt{742}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{4}^{(b)}(B_{2g})}{53}$$

z353 $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},c) = \frac{5\sqrt{106}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{4}^{(b)}(B_{2g})}{106} + \frac{\sqrt{742}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{4}^{(b)}(B_{2g})}{53}$$

z354 $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},d) = -\frac{125\sqrt{2274}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{18192} - \frac{43\sqrt{1137}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{4548} + \frac{125\sqrt{2274}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{18192} + \frac{43\sqrt{1137}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{4548} + \frac{\sqrt{5685}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2274} - \frac{29\sqrt{15918}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{18192} - \frac{29\sqrt{15918}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{18192}$$

z355 $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},d) = \frac{125\sqrt{2274}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{18192} + \frac{43\sqrt{1137}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{4548} + \frac{125\sqrt{2274}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{18192} + \frac{43\sqrt{1137}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{4548} + \frac{\sqrt{5685}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2274} + \frac{29\sqrt{15918}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{18192} - \frac{29\sqrt{15918}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{18192}$$

z356 $$\mathbb{Q}_{6,1}^{(c)}(E_{1g},1) = \frac{\sqrt{3}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{6} - \frac{\sqrt{3}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{6} - \frac{\sqrt{6}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{6} + \frac{\sqrt{6}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{6}$$

z357 $$\mathbb{Q}_{6,2}^{(c)}(E_{1g},1) = -\frac{\sqrt{3}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{6} - \frac{\sqrt{3}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{6} + \frac{\sqrt{6}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{6} + \frac{\sqrt{6}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{6}$$

z358 $$\mathbb{Q}_{6,1}^{(c)}(E_{1g},2) = \frac{\sqrt{2653}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{758} - \frac{2\sqrt{5306}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{1137} - \frac{\sqrt{2653}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{758} + \frac{2\sqrt{5306}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{1137} + \frac{3\sqrt{26530}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{758} + \frac{17\sqrt{379}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2274} + \frac{17\sqrt{379}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2274}$$

z359 $$\mathbb{Q}_{6,2}^{(c)}(E_{1g},2) = -\frac{\sqrt{2653}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{758} + \frac{2\sqrt{5306}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{1137} - \frac{\sqrt{2653}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{758} + \frac{2\sqrt{5306}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{1137} + \frac{3\sqrt{26530}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{758} - \frac{17\sqrt{379}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2274} + \frac{17\sqrt{379}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2274}$$

z360 $$\mathbb{G}_{1,1}^{(c)}(E_{1g}) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{4} - \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{4} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{4} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{4}$$

z361 $$\mathbb{G}_{1,2}^{(c)}(E_{1g}) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{4} + \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{4} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{4} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{4}$$

$\boxed{\text{z362}}$ $$\mathbb{G}^{(c)}_{3,1}(E_{1g}) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{4} - \frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{6} - \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{4} + \frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{6} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{12} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{12}$$

$\boxed{\text{z363}}$ $$\mathbb{G}^{(c)}_{3,2}(E_{1g}) = -\frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{4} + \frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{6} - \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{4} + \frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{6} + \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{12} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{12}$$

$\boxed{\text{z364}}$ $$\mathbb{G}^{(c)}_{5,1}(E_{1g},1) = \frac{\sqrt{6}\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{6} - \frac{\sqrt{6}\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{6} + \frac{\sqrt{3}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{6} - \frac{\sqrt{3}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{6}$$

$\boxed{\text{z365}}$ $$\mathbb{G}^{(c)}_{5,2}(E_{1g},1) = -\frac{\sqrt{6}\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{6} - \frac{\sqrt{6}\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{6} - \frac{\sqrt{3}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{6} - \frac{\sqrt{3}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{6}$$

$\boxed{\text{z366}}$ $$\mathbb{Q}^{(c)}_{1,1}(E_{1u},a) = \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{1}(A_{2u})}{2} - \frac{\mathbb{M}^{(a)}_{1}(A_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{2}$$

$\boxed{\text{z367}}$ $$\mathbb{Q}^{(c)}_{1,2}(E_{1u},a) = -\frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{1}(A_{2u})}{2} + \frac{\mathbb{M}^{(a)}_{1}(A_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{2}$$

$\boxed{\text{z368}}$ $$\mathbb{Q}^{(c)}_{1,1}(E_{1u},b) = \frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{2}$$

$\boxed{\text{z369}}$ $$\mathbb{Q}^{(c)}_{1,2}(E_{1u},b) = -\frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{2}$$

$\boxed{\text{z370}}$ $$\mathbb{Q}^{(c)}_{1,1}(E_{1u},c) = -\frac{\sqrt{2}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{3}(B_{1u})}{2}$$

$\boxed{\text{z371}}$ $$\mathbb{Q}^{(c)}_{1,2}(E_{1u},c) = \frac{\sqrt{2}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{3}(B_{1u})}{2}$$

$\boxed{\text{z372}}$ $$\mathbb{Q}^{(c)}_{1,1}(E_{1u},d) = -\frac{\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{8} + \frac{\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{8} - \frac{\sqrt{15}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{8} + \frac{\sqrt{15}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{8}$$

$\boxed{\text{z373}}$ $$\mathbb{Q}^{(c)}_{1,2}(E_{1u},d) = \frac{\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{8} + \frac{\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{8} + \frac{\sqrt{15}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{8} + \frac{\sqrt{15}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{8}$$

$\boxed{\text{z374}}$ $$\mathbb{Q}^{(c)}_{3,1}(E_{1u},a) = -\frac{\sqrt{15}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{12} + \frac{\sqrt{6}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1}(A_{2u})}{12} + \frac{\sqrt{15}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{12} - \frac{\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{2}$$

$\boxed{\text{z375}}$ $$\mathbb{Q}^{(c)}_{3,2}(E_{1u},a) = -\frac{\sqrt{6}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1}(A_{2u})}{12} + \frac{\sqrt{15}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{12} + \frac{\sqrt{15}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{12} + \frac{\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{2}$$

$\boxed{\text{z398}}$ $$\mathbb{Q}_{3,1}^{(c)}(E_{1u},b)=\frac{\sqrt{15}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{8}-\frac{\sqrt{15}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{8}-\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{8}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{8}$$

$\boxed{\text{z399}}$ $$\mathbb{Q}_{3,2}^{(c)}(E_{1u},b)=-\frac{\sqrt{15}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{8}-\frac{\sqrt{15}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{8}+\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{8}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{8}$$

$\boxed{\text{z400}}$ $$\mathbb{Q}_{5,1}^{(c)}(E_{1u},1)=\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}$$

$\boxed{\text{z401}}$ $$\mathbb{Q}_{5,2}^{(c)}(E_{1u},1)=-\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}$$

$\boxed{\text{z402}}$ $$\mathbb{G}_{2,1}^{(c)}(E_{1u},a)=\frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{2}+\frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$$

$\boxed{\text{z403}}$ $$\mathbb{G}_{2,2}^{(c)}(E_{1u},a)=-\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{2}-\frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$$

$\boxed{\text{z426}}$ $$\mathbb{G}_{2,1}^{(c)}(E_{1u},b)=\frac{\sqrt{210}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{42}+\frac{2\sqrt{21}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{21}-\frac{\sqrt{210}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{42}-\frac{\sqrt{14}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{14}$$

$\boxed{\text{z427}}$ $$\mathbb{G}_{2,2}^{(c)}(E_{1u},b)=-\frac{2\sqrt{21}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{21}-\frac{\sqrt{210}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{42}-\frac{\sqrt{210}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{42}+\frac{\sqrt{14}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{14}$$

$\boxed{\text{z428}}$ $$\mathbb{G}_{4,1}^{(c)}(E_{1u})=-\frac{\sqrt{21}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{28}+\frac{\sqrt{210}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{28}+\frac{\sqrt{21}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{28}+\frac{\sqrt{35}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{14}$$

$\boxed{\text{z429}}$ $$\mathbb{G}_{4,2}^{(c)}(E_{1u})=-\frac{\sqrt{210}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{28}+\frac{\sqrt{21}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{28}+\frac{\sqrt{21}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{28}-\frac{\sqrt{35}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{14}$$

$\boxed{\text{z461}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z462}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z463}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},b)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z464}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},b)=\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z485}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},c) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{4}^{(b)}(B_{2g})}{2}$$

$\boxed{\text{z486}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},c) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{4}^{(b)}(B_{2g})}{2}$$

$\boxed{\text{z487}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},d) = -\frac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{10} + \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{10} - \frac{\sqrt{5}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{5}$$

$\boxed{\text{z488}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},d) = \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{10} + \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{10} - \frac{\sqrt{5}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{5}$$

$\boxed{\text{z489}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},e) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{4}^{(b)}(B_{2g})}{2}$$

$\boxed{\text{z490}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},e) = -\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{4}^{(b)}(B_{2g})}{2}$$

$\boxed{\text{z593}}$ $$\begin{aligned}\mathbb{Q}_{2,1}^{(c)}(E_{2g},f) = &\frac{\sqrt{555}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{222} + \frac{\sqrt{7770}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{222} - \frac{\sqrt{555}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{222} - \frac{\sqrt{7770}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{222} \\ &+ \frac{\sqrt{222}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{222} - \frac{\sqrt{3885}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{222} + \frac{\sqrt{3885}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{222}\end{aligned}$$

$\boxed{\text{z594}}$ $$\begin{aligned}\mathbb{Q}_{2,2}^{(c)}(E_{2g},f) = &-\frac{\sqrt{555}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{222} - \frac{\sqrt{7770}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{222} - \frac{\sqrt{555}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{222} \\ &- \frac{\sqrt{7770}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{222} + \frac{\sqrt{222}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{222} + \frac{\sqrt{3885}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{222} + \frac{\sqrt{3885}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{222}\end{aligned}$$

$\boxed{\text{z595}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1a) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z596}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1a) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

$\boxed{\text{z597}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1b) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z598}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1b) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z599}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1c)=-\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{6}+\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{6}-\frac{\sqrt{7}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{6}-\frac{\sqrt{7}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{6}$$

$\boxed{\text{z600}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1c)=\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{6}+\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{6}+\frac{\sqrt{7}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{6}-\frac{\sqrt{7}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{6}$$

$\boxed{\text{z601}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},2a)=-\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{10}+\frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{10}+\frac{\sqrt{30}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{10}$$

$\boxed{\text{z602}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},2a)=\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{10}+\frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{10}+\frac{\sqrt{30}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{10}$$

$\boxed{\text{z603}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},2b)=\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z604}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},2b)=\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z605}}$ $$\begin{aligned}\mathbb{Q}_{4,1}^{(c)}(E_{2g},2c)=&-\frac{137\sqrt{30747}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{122988}-\frac{13\sqrt{430458}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{61494}+\frac{137\sqrt{30747}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{122988}\\&+\frac{13\sqrt{430458}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{61494}-\frac{47\sqrt{307470}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{61494}-\frac{85\sqrt{215229}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{122988}+\frac{85\sqrt{215229}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{122988}\end{aligned}$$

$\boxed{\text{z606}}$ $$\begin{aligned}\mathbb{Q}_{4,2}^{(c)}(E_{2g},2c)=&\frac{137\sqrt{30747}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{122988}+\frac{13\sqrt{430458}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{61494}+\frac{137\sqrt{30747}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{122988}+\frac{13\sqrt{430458}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{61494}\\&-\frac{47\sqrt{307470}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{61494}+\frac{85\sqrt{215229}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{122988}+\frac{85\sqrt{215229}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{122988}\end{aligned}$$

$\boxed{\text{z607}}$ $$\mathbb{Q}_{6,1}^{(c)}(E_{2g},1)=\frac{\sqrt{7}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{6}-\frac{\sqrt{7}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{6}-\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{6}-\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{6}$$

$\boxed{\text{z608}}$ $$\mathbb{Q}_{6,2}^{(c)}(E_{2g},1)=-\frac{\sqrt{7}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{6}-\frac{\sqrt{7}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{6}+\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{6}-\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{6}$$

$\boxed{\text{z609}}$ $$\begin{aligned}\mathbb{Q}_{6,1}^{(c)}(E_{2g},2)=&-\frac{17\sqrt{11634}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{4155}+\frac{11\sqrt{831}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2770}+\frac{17\sqrt{11634}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{4155}\\&-\frac{11\sqrt{831}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2770}+\frac{7\sqrt{29085}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{4155}+\frac{\sqrt{1662}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{1385}-\frac{\sqrt{1662}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{1385}\end{aligned}$$

$\boxed{\text{z610}}$ $$\mathbb{Q}_{6,2}^{(c)}(E_{2g},2) = \frac{17\sqrt{11634}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{4155} - \frac{11\sqrt{831}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2770} + \frac{17\sqrt{11634}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{4155} - \frac{11\sqrt{831}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2770} + \frac{7\sqrt{29085}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{4155} - \frac{\sqrt{1662}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{1385} - \frac{\sqrt{1662}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{1385}$$

$\boxed{\text{z611}}$ $$\mathbb{G}_{3,1}^{(c)}(E_{2g}) = -\frac{\sqrt{21}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{60} + \frac{\sqrt{6}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{10} + \frac{\sqrt{21}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{60} - \frac{\sqrt{6}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{10} - \frac{\sqrt{210}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{30} + \frac{3\sqrt{3}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{20} - \frac{3\sqrt{3}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{20}$$

$\boxed{\text{z612}}$ $$\mathbb{G}_{3,2}^{(c)}(E_{2g}) = \frac{\sqrt{21}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{60} - \frac{\sqrt{6}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{10} + \frac{\sqrt{21}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{60} - \frac{\sqrt{6}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{10} - \frac{\sqrt{210}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{30} - \frac{3\sqrt{3}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{20} - \frac{3\sqrt{3}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{20}$$

$\boxed{\text{z701}}$ $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},a) = -\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$$

$\boxed{\text{z702}}$ $$\mathbb{Q}_{3,2}^{(c)}(E_{2u},a) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$$

$\boxed{\text{z703}}$ $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},b) = -\frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}$$

$\boxed{\text{z704}}$ $$\mathbb{Q}_{3,2}^{(c)}(E_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}$$

$\boxed{\text{z705}}$ $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},c) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{12} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{12} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{6} + \frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{4} + \frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{4}$$

$\boxed{\text{z706}}$ $$\mathbb{Q}_{3,2}^{(c)}(E_{2u},c) = -\frac{\sqrt{15}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{12} + \frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{6} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{12} - \frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{4} + \frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{4}$$

$\boxed{\text{z707}}$ $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},d) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$$

$\boxed{\text{z708}}$ $$\mathbb{Q}_{3,2}^{(c)}(E_{2u},d) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$$

$\boxed{\text{z709}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u},e)=\frac{\sqrt{2}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}$

$\boxed{\text{z710}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u},e)=-\frac{\sqrt{2}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}$

$\boxed{\text{z711}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{2u},1)=-\frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}+\frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}$

$\boxed{\text{z712}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{2u},1)=\frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}+\frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}$

$\boxed{\text{z713}}$ $\mathbb{G}_{2,1}^{(c)}(E_{2u},a)=\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}-\frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z714}}$ $\mathbb{G}_{2,2}^{(c)}(E_{2u},a)=-\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}-\frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z715}}$ $\mathbb{G}_{2,1}^{(c)}(E_{2u},b)=-\frac{\sqrt{21}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{42}+\frac{\sqrt{21}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{42}+\frac{\sqrt{210}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{42}+\frac{\sqrt{35}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{14}+\frac{\sqrt{35}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{14}$

$\boxed{\text{z716}}$ $\mathbb{G}_{2,2}^{(c)}(E_{2u},b)=\frac{\sqrt{21}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{42}-\frac{\sqrt{210}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{42}+\frac{\sqrt{21}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{42}-\frac{\sqrt{35}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{14}+\frac{\sqrt{35}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{14}$

$\boxed{\text{z717}}$ $\mathbb{G}_{4,1}^{(c)}(E_{2u},1)=-\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z718}}$ $\mathbb{G}_{4,2}^{(c)}(E_{2u},1)=\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z719}}$ $\mathbb{G}_{4,1}^{(c)}(E_{2u},2)=\frac{\sqrt{105}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{28}-\frac{\sqrt{105}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{28}+\frac{\sqrt{42}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{14}-\frac{\sqrt{7}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{28}-\frac{\sqrt{7}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{28}$

$\boxed{\text{z720}}$ $\mathbb{G}_{4,2}^{(c)}(E_{2u},2)=-\frac{\sqrt{105}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{28}-\frac{\sqrt{42}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{14}-\frac{\sqrt{105}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{28}+\frac{\sqrt{7}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{28}-\frac{\sqrt{7}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{28}$

Atomic SAMB

- bra: $\langle d_u|, \langle d_{xz}|, \langle d_{yz}|, \langle d_{xy}|, \langle d_v|$
- ket: $|d_u\rangle, |d_{xz}\rangle, |d_{yz}\rangle, |d_{xy}\rangle, |d_v\rangle$

$$\boxed{\text{x1}} \quad \mathbb{Q}_0^{(a)}(A_{1g}) = \begin{bmatrix} \frac{\sqrt{5}}{5} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}}{5} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{5}}{5} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}}{5} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{5} \end{bmatrix}$$

$$\boxed{\text{x2}} \quad \mathbb{Q}_2^{(a)}(A_{1g}) = \begin{bmatrix} \frac{\sqrt{14}}{7} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{14}}{7} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{14}}{14} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{7} \end{bmatrix}$$

$$\boxed{\text{x3}} \quad \mathbb{Q}_4^{(a)}(A_{1g}) = \begin{bmatrix} \frac{3\sqrt{70}}{35} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{70}}{70} & 0 & 0 & 0 \\ 0 & 0 & -\frac{2\sqrt{70}}{35} & 0 & 0 \\ 0 & 0 & 0 & -\frac{2\sqrt{70}}{35} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{70} \end{bmatrix}$$

$$\boxed{\text{x4}} \quad \mathbb{Q}_4^{(a)}(B_{1g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & -\frac{1}{2} \\ 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & -\frac{1}{2} & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x5}} \quad \mathbb{Q}_4^{(a)}(B_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{1}{2} & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & \frac{1}{2} & 0 \end{bmatrix}$$

$$\boxed{\text{x6}} \quad \mathbb{Q}_{2,1}^{(a)}(E_{1g}) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{42}}{14} & 0 & 0 \\ \frac{\sqrt{14}}{14} & -\frac{\sqrt{42}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{14} \\ 0 & 0 & 0 & \frac{\sqrt{42}}{14} & 0 \end{bmatrix}$$

$\boxed{\text{x7}}$ $\mathbb{Q}^{(a)}_{2,2}(E_{1g}) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{14}}{14} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{42}}{14} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{14} \\ -\frac{\sqrt{14}}{14} & -\frac{\sqrt{42}}{14} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{42}}{14} & 0 & 0 \end{bmatrix}$

$\boxed{\text{x8}}$ $\mathbb{Q}^{(a)}_{4,1}(E_{1g}) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{21}}{7} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 \\ \frac{\sqrt{21}}{7} & \frac{\sqrt{7}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} \\ 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 \end{bmatrix}$

$\boxed{\text{x9}}$ $\mathbb{Q}^{(a)}_{4,2}(E_{1g}) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{21}}{7} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} \\ -\frac{\sqrt{21}}{7} & \frac{\sqrt{7}}{14} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 \end{bmatrix}$

$\boxed{\text{x10}}$ $\mathbb{Q}^{(a)}_{2,1}(E_{2g}) = \begin{bmatrix} 0 & -\frac{\sqrt{14}}{7} & 0 & 0 & 0 \\ -\frac{\sqrt{14}}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{42}}{14} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{42}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x11}}$ $\mathbb{Q}^{(a)}_{2,2}(E_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{7} \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{42}}{14} & 0 \\ 0 & 0 & -\frac{\sqrt{42}}{14} & 0 & 0 \\ \frac{\sqrt{14}}{7} & 0 & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x12}}$ $\mathbb{Q}^{(a)}_{4,1}(E_{2g}, 1) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{2} \end{bmatrix}$

$\boxed{\text{x13}}$ $\mathbb{Q}^{(a)}_{4,2}(E_{2g}, 1) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{2} \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{2} & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x14}}$ $\mathbb{Q}_{4,1}^{(a)}(E_{2g},2) = \begin{bmatrix} 0 & \frac{\sqrt{42}}{14} & 0 & 0 & 0 \\ \frac{\sqrt{42}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{14}}{7} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{14}}{7} & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x15}}$ $\mathbb{Q}_{4,2}^{(a)}(E_{2g},2) = \begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{14} \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{14}}{7} & 0 \\ 0 & 0 & -\frac{\sqrt{14}}{7} & 0 & 0 \\ -\frac{\sqrt{42}}{14} & 0 & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x16}}$ $\mathbb{M}_{1}^{(a)}(A_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{5} \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 \\ 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 \\ 0 & \frac{\sqrt{10}i}{5} & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x17}}$ $\mathbb{M}_{3}^{(a)}(A_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{5} & 0 \\ 0 & 0 & -\frac{\sqrt{10}i}{5} & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x18}}$ $\mathbb{M}_{3}^{(a)}(B_{1g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & -\frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & -\frac{i}{2} & 0 & 0 \end{bmatrix}$

$\boxed{\text{x19}}$ $\mathbb{M}_{3}^{(a)}(B_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{i}{2} & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & 0 & 0 & -\frac{i}{2} & 0 \end{bmatrix}$

$\boxed{\text{x20}}$ $\mathbb{M}_{1,1}^{(a)}(E_{1g}) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{30}i}{10} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 \\ -\frac{\sqrt{30}i}{10} & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 \end{bmatrix}$

x21 $\mathbb{M}_{1,2}^{(a)}(E_{1g}) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{30}i}{10} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} \\ \frac{\sqrt{30}i}{10} & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 \end{bmatrix}$

x22 $\mathbb{M}_{3,1}^{(a)}(E_{1g}) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{5}i}{5} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}i}{10} & 0 & 0 \\ -\frac{\sqrt{5}i}{5} & \frac{\sqrt{15}i}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{15}i}{10} & 0 \end{bmatrix}$

x23 $\mathbb{M}_{3,2}^{(a)}(E_{1g}) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{5}i}{5} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{10} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{10} \\ \frac{\sqrt{5}i}{5} & \frac{\sqrt{15}i}{10} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}i}{10} & 0 & 0 \end{bmatrix}$

x24 $\mathbb{M}_{3,1}^{(a)}(E_{2g}) = \begin{bmatrix} 0 & -\frac{\sqrt{2}i}{2} & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$

x25 $\mathbb{M}_{3,2}^{(a)}(E_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{2} \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$

Cluster SAMB

- Site cluster

** Wyckoff: 2c

y1 $\mathbb{Q}_{0}^{(s)}(A_{1g}) = \left[\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right]$

$\boxed{\text{y2}}$ $\mathbb{Q}_3^{(s)}(B_{1u}) = \left[\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right]$

** Wyckoff: `6h`

$\boxed{\text{y3}}$ $\mathbb{Q}_0^{(s)}(A_{1g}) = \left[\frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}\right]$

$\boxed{\text{y4}}$ $\mathbb{Q}_3^{(s)}(B_{1u}) = \left[\frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}\right]$

$\boxed{\text{y5}}$ $\mathbb{Q}_{1,1}^{(s)}(E_{1u}) = \left[0, -\frac{1}{2}, \frac{1}{2}, 0, \frac{1}{2}, -\frac{1}{2}\right]$

$\boxed{\text{y6}}$ $\mathbb{Q}_{1,2}^{(s)}(E_{1u}) = \left[\frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}\right]$

$\boxed{\text{y7}}$ $\mathbb{Q}_{2,1}^{(s)}(E_{2g}) = \left[\frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}\right]$

$\boxed{\text{y8}}$ $\mathbb{Q}_{2,2}^{(s)}(E_{2g}) = \left[0, \frac{1}{2}, -\frac{1}{2}, 0, \frac{1}{2}, -\frac{1}{2}\right]$

- Bond cluster

** Wyckoff: `6a@6g`

$\boxed{\text{y9}}$ $\mathbb{Q}_0^{(s)}(A_{1g}) = \left[\frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}\right]$

$\boxed{\text{y10}}$ $\mathbb{T}_1^{(s)}(A_{2u}) = \left[\frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}\right]$

$\boxed{\text{y11}}$ $\mathbb{T}_3^{(s)}(B_{1u}) = \left[\frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, -\frac{\sqrt{6}i}{6}, -\frac{\sqrt{6}i}{6}, -\frac{\sqrt{6}i}{6}\right]$

$\boxed{\text{y12}}$ $\mathbb{Q}_4^{(s)}(B_{2g}) = \left[\frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}\right]$

$\boxed{\text{y13}}$ $\mathbb{Q}_{2,1}^{(s)}(E_{1g}) = \left[\frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}\right]$

$\boxed{\text{y14}}$ $\mathbb{Q}_{2,2}^{(s)}(E_{1g}) = \left[0, \frac{1}{2}, -\frac{1}{2}, 0, -\frac{1}{2}, \frac{1}{2}\right]$

$\boxed{\text{y15}}$ $\mathbb{T}_{1,1}^{(s)}(E_{1u}) = \left[0, -\frac{i}{2}, \frac{i}{2}, 0, \frac{i}{2}, -\frac{i}{2}\right]$

$\boxed{\text{y16}}$ $\mathbb{T}_{1,2}^{(s)}(E_{1u}) = \left[\frac{\sqrt{3}i}{3}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{3}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}\right]$

$\boxed{\text{y17}}$ $\mathbb{Q}_{2,1}^{(s)}(E_{2g}) = \left[\frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}\right]$

$\boxed{\text{y18}}$ $\mathbb{Q}_{2,2}^{(s)}(E_{2g}) = \left[0, \frac{1}{2}, -\frac{1}{2}, 0, \frac{1}{2}, -\frac{1}{2}\right]$

$\boxed{\text{y19}}$ $\mathbb{M}_{2,1}^{(s)}(E_{2u}) = \left[0, -\frac{i}{2}, \frac{i}{2}, 0, -\frac{i}{2}, \frac{i}{2}\right]$

$\boxed{\text{y20}}$ $\mathbb{M}_{2,2}^{(s)}(E_{2u}) = \left[\frac{\sqrt{3}i}{3}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{3}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}\right]$

** Wyckoff: `6b@6h`

$\boxed{\text{y21}}$ $\mathbb{Q}_{0}^{(s)}(A_{1g}) = \left[\frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}\right]$

$\boxed{\text{y22}}$ $\mathbb{M}_{1}^{(s)}(A_{2g}) = \left[\frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}\right]$

$\boxed{\text{y23}}$ $\mathbb{Q}_{3}^{(s)}(B_{1u}) = \left[\frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}\right]$

$\boxed{\text{y24}}$ $\mathbb{T}_{3}^{(s)}(B_{2u}) = \left[\frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, -\frac{\sqrt{6}i}{6}, -\frac{\sqrt{6}i}{6}, -\frac{\sqrt{6}i}{6}\right]$

$\boxed{\text{y25}}$ $\mathbb{Q}_{1,1}^{(s)}(E_{1u}) = \left[0, -\frac{1}{2}, \frac{1}{2}, 0, \frac{1}{2}, -\frac{1}{2}\right]$

$\boxed{\text{y26}}$ $\mathbb{Q}_{1,2}^{(s)}(E_{1u}) = \left[\frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}\right]$

$\boxed{\text{y27}}$ $\mathbb{T}_{1,1}^{(s)}(E_{1u}) = \left[\frac{\sqrt{3}i}{3}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{3}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}\right]$

$\boxed{\text{y28}}$ $\mathbb{T}_{1,2}^{(s)}(E_{1u}) = \left[0, \frac{i}{2}, -\frac{i}{2}, 0, -\frac{i}{2}, \frac{i}{2}\right]$

$\boxed{\text{y29}}$ $\mathbb{Q}_{2,1}^{(s)}(E_{2g}) = \left[\frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}\right]$

$\boxed{\text{y30}}$ $\mathbb{Q}_{2,2}^{(s)}(E_{2g}) = \left[0, \frac{1}{2}, -\frac{1}{2}, 0, \frac{1}{2}, -\frac{1}{2}\right]$

$\boxed{\text{y31}}$ $\mathbb{T}_{2,1}^{(s)}(E_{2g}) = \left[0, \frac{i}{2}, -\frac{i}{2}, 0, \frac{i}{2}, -\frac{i}{2}\right]$

$\boxed{\text{y32}}$ $\mathbb{T}_{2,2}^{(s)}(E_{2g}) = \left[-\frac{\sqrt{3}i}{3}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{3}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}\right]$

** Wyckoff: `12a@12j`

$\boxed{\text{y33}}$ $\mathbb{Q}_{0}^{(s)}(A_{1g}) = \left[\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}\right]$

$\boxed{\text{y34}}$ $\mathbb{T}_{0}^{(s)}(A_{1g}) = \left[\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}\right]$

$\boxed{\text{y35}}$ $\mathbb{M}_{1}^{(s)}(A_{2g}) = \left[\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}\right]$

$\boxed{\text{y36}}$ $\mathbb{Q}_{6}^{(s)}(A_{2g}) = \left[\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}\right]$

$\boxed{\text{y37}}$ $\mathbb{Q}_{3}^{(s)}(B_{1u}) = \left[\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}\right]$

$$\boxed{\text{y38}}\quad \mathbb{T}_{3}^{(s)}(B_{1u}) = \left[\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}\right]$$

$$\boxed{\text{y39}}\quad \mathbb{Q}_{3}^{(s)}(B_{2u}) = \left[\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}\right]$$

$$\boxed{\text{y40}}\quad \mathbb{T}_{3}^{(s)}(B_{2u}) = \left[\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}\right]$$

$$\boxed{\text{y41}}\quad \mathbb{Q}_{1,1}^{(s)}(E_{1u}) = \left[\frac{5\sqrt{42}}{84}, -\frac{\sqrt{42}}{21}, -\frac{\sqrt{42}}{84}, -\frac{5\sqrt{42}}{84}, \frac{\sqrt{42}}{21}, \frac{\sqrt{42}}{84}, -\frac{\sqrt{42}}{84}, \frac{5\sqrt{42}}{84}, -\frac{\sqrt{42}}{21}, \frac{\sqrt{42}}{84}, -\frac{5\sqrt{42}}{84}, \frac{\sqrt{42}}{21}\right]$$

$$\boxed{\text{y42}}\quad \mathbb{Q}_{1,2}^{(s)}(E_{1u}) = \left[\frac{\sqrt{14}}{28}, \frac{\sqrt{14}}{14}, -\frac{3\sqrt{14}}{28}, -\frac{\sqrt{14}}{28}, -\frac{\sqrt{14}}{14}, \frac{3\sqrt{14}}{28}, \frac{3\sqrt{14}}{28}, -\frac{\sqrt{14}}{28}, -\frac{\sqrt{14}}{14}, -\frac{3\sqrt{14}}{28}, \frac{\sqrt{14}}{28}, \frac{\sqrt{14}}{14}\right]$$

$$\boxed{\text{y43}}\quad \mathbb{T}_{1,1}^{(s)}(E_{1u}, a) = \left[\frac{5\sqrt{42}i}{84}, -\frac{\sqrt{42}i}{21}, -\frac{\sqrt{42}i}{84}, -\frac{5\sqrt{42}i}{84}, \frac{\sqrt{42}i}{21}, \frac{\sqrt{42}i}{84}, -\frac{\sqrt{42}i}{84}, \frac{5\sqrt{42}i}{84}, -\frac{\sqrt{42}i}{21}, \frac{\sqrt{42}i}{84}, -\frac{5\sqrt{42}i}{84}, \frac{\sqrt{42}i}{21}\right]$$

$$\boxed{\text{y44}}\quad \mathbb{T}_{1,2}^{(s)}(E_{1u}, a) = \left[\frac{\sqrt{14}i}{28}, \frac{\sqrt{14}i}{14}, -\frac{3\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{14}, \frac{3\sqrt{14}i}{28}, \frac{3\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{14}, -\frac{3\sqrt{14}i}{28}, \frac{\sqrt{14}i}{28}, \frac{\sqrt{14}i}{14}\right]$$

$$\boxed{\text{y45}}\quad \mathbb{T}_{1,1}^{(s)}(E_{1u}, b) = \left[\frac{\sqrt{14}i}{28}, \frac{\sqrt{14}i}{14}, -\frac{3\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{14}, \frac{3\sqrt{14}i}{28}, -\frac{3\sqrt{14}i}{28}, \frac{\sqrt{14}i}{28}, \frac{\sqrt{14}i}{14}, \frac{3\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{14}\right]$$

$$\boxed{\text{y46}}\quad \mathbb{T}_{1,2}^{(s)}(E_{1u}, b) = \left[-\frac{5\sqrt{42}i}{84}, \frac{\sqrt{42}i}{21}, \frac{\sqrt{42}i}{84}, \frac{5\sqrt{42}i}{84}, -\frac{\sqrt{42}i}{21}, -\frac{\sqrt{42}i}{84}, -\frac{\sqrt{42}i}{84}, \frac{5\sqrt{42}i}{84}, -\frac{\sqrt{42}i}{21}, \frac{\sqrt{42}i}{84}, -\frac{5\sqrt{42}i}{84}, \frac{\sqrt{42}i}{21}\right]$$

$$\boxed{\text{y47}}\quad \mathbb{Q}_{5,1}^{(s)}(E_{1u}, 1) = \left[\frac{\sqrt{14}}{28}, \frac{\sqrt{14}}{14}, -\frac{3\sqrt{14}}{28}, -\frac{\sqrt{14}}{28}, -\frac{\sqrt{14}}{14}, \frac{3\sqrt{14}}{28}, -\frac{3\sqrt{14}}{28}, \frac{\sqrt{14}}{28}, \frac{\sqrt{14}}{14}, \frac{3\sqrt{14}}{28}, -\frac{\sqrt{14}}{28}, -\frac{\sqrt{14}}{14}\right]$$

$$\boxed{\text{y48}}\quad \mathbb{Q}_{5,2}^{(s)}(E_{1u}, 1) = \left[-\frac{5\sqrt{42}}{84}, \frac{\sqrt{42}}{21}, \frac{\sqrt{42}}{84}, \frac{5\sqrt{42}}{84}, -\frac{\sqrt{42}}{21}, -\frac{\sqrt{42}}{84}, -\frac{\sqrt{42}}{84}, \frac{5\sqrt{42}}{84}, -\frac{\sqrt{42}}{21}, \frac{\sqrt{42}}{84}, -\frac{5\sqrt{42}}{84}, \frac{\sqrt{42}}{21}\right]$$

$$\boxed{\text{y49}}\quad \mathbb{Q}_{2,1}^{(s)}(E_{2g}) = \left[\frac{11\sqrt{6}}{84}, \frac{\sqrt{6}}{42}, -\frac{13\sqrt{6}}{84}, \frac{11\sqrt{6}}{84}, \frac{\sqrt{6}}{42}, -\frac{13\sqrt{6}}{84}, -\frac{13\sqrt{6}}{84}, \frac{11\sqrt{6}}{84}, \frac{\sqrt{6}}{42}, -\frac{13\sqrt{6}}{84}, \frac{11\sqrt{6}}{84}, \frac{\sqrt{6}}{42}\right]$$

$$\boxed{\text{y50}}\quad \mathbb{Q}_{2,2}^{(s)}(E_{2g}) = \left[-\frac{5\sqrt{2}}{28}, \frac{2\sqrt{2}}{7}, -\frac{3\sqrt{2}}{28}, -\frac{5\sqrt{2}}{28}, \frac{2\sqrt{2}}{7}, -\frac{3\sqrt{2}}{28}, \frac{3\sqrt{2}}{28}, \frac{5\sqrt{2}}{28}, -\frac{2\sqrt{2}}{7}, \frac{3\sqrt{2}}{28}, \frac{5\sqrt{2}}{28}, -\frac{2\sqrt{2}}{7}\right]$$

$\boxed{\text{y51}}$ $\mathbb{T}_{2,1}^{(s)}(E_{2g}, a) = \left[\frac{11\sqrt{6}i}{84}, \frac{\sqrt{6}i}{42}, -\frac{13\sqrt{6}i}{84}, \frac{11\sqrt{6}i}{84}, \frac{\sqrt{6}i}{42}, -\frac{13\sqrt{6}i}{84}, -\frac{13\sqrt{6}i}{84}, \frac{11\sqrt{6}i}{84}, \frac{\sqrt{6}i}{42}, -\frac{13\sqrt{6}i}{84}, \frac{11\sqrt{6}i}{84}, \frac{\sqrt{6}i}{42}\right]$

$\boxed{\text{y52}}$ $\mathbb{T}_{2,2}^{(s)}(E_{2g}, a) = \left[-\frac{5\sqrt{2}i}{28}, \frac{2\sqrt{2}i}{7}, -\frac{3\sqrt{2}i}{28}, -\frac{5\sqrt{2}i}{28}, \frac{2\sqrt{2}i}{7}, -\frac{3\sqrt{2}i}{28}, \frac{3\sqrt{2}i}{28}, \frac{5\sqrt{2}i}{28}, -\frac{2\sqrt{2}i}{7}, \frac{3\sqrt{2}i}{28}, \frac{5\sqrt{2}i}{28}, -\frac{2\sqrt{2}i}{7}\right]$

$\boxed{\text{y53}}$ $\mathbb{T}_{2,1}^{(s)}(E_{2g}, b) = \left[\frac{5\sqrt{2}i}{28}, -\frac{2\sqrt{2}i}{7}, \frac{3\sqrt{2}i}{28}, \frac{5\sqrt{2}i}{28}, -\frac{2\sqrt{2}i}{7}, \frac{3\sqrt{2}i}{28}, \frac{3\sqrt{2}i}{28}, \frac{5\sqrt{2}i}{28}, -\frac{2\sqrt{2}i}{7}, \frac{3\sqrt{2}i}{28}, \frac{5\sqrt{2}i}{28}, -\frac{2\sqrt{2}i}{7}\right]$

$\boxed{\text{y54}}$ $\mathbb{T}_{2,2}^{(s)}(E_{2g}, b) = \left[\frac{11\sqrt{6}i}{84}, \frac{\sqrt{6}i}{42}, -\frac{13\sqrt{6}i}{84}, \frac{11\sqrt{6}i}{84}, \frac{\sqrt{6}i}{42}, -\frac{13\sqrt{6}i}{84}, \frac{13\sqrt{6}i}{84}, -\frac{11\sqrt{6}i}{84}, -\frac{\sqrt{6}i}{42}, \frac{13\sqrt{6}i}{84}, -\frac{11\sqrt{6}i}{84}, -\frac{\sqrt{6}i}{42}\right]$

$\boxed{\text{y55}}$ $\mathbb{Q}_{4,1}^{(s)}(E_{2g}, 1) = \left[\frac{5\sqrt{2}}{28}, -\frac{2\sqrt{2}}{7}, \frac{3\sqrt{2}}{28}, \frac{5\sqrt{2}}{28}, -\frac{2\sqrt{2}}{7}, \frac{3\sqrt{2}}{28}, \frac{3\sqrt{2}}{28}, \frac{5\sqrt{2}}{28}, -\frac{2\sqrt{2}}{7}, \frac{3\sqrt{2}}{28}, \frac{5\sqrt{2}}{28}, -\frac{2\sqrt{2}}{7}\right]$

$\boxed{\text{y56}}$ $\mathbb{Q}_{4,2}^{(s)}(E_{2g}, 1) = \left[\frac{11\sqrt{6}}{84}, \frac{\sqrt{6}}{42}, -\frac{13\sqrt{6}}{84}, \frac{11\sqrt{6}}{84}, \frac{\sqrt{6}}{42}, -\frac{13\sqrt{6}}{84}, \frac{13\sqrt{6}}{84}, -\frac{11\sqrt{6}}{84}, -\frac{\sqrt{6}}{42}, \frac{13\sqrt{6}}{84}, -\frac{11\sqrt{6}}{84}, -\frac{\sqrt{6}}{42}\right]$

Site and Bond

Table 5: Orbital of each site

#	site	orbital
1	`Mn`	$\lvert d_u\rangle$, $\lvert d_{xz}\rangle$, $\lvert d_{yz}\rangle$, $\lvert d_{xy}\rangle$, $\lvert d_v\rangle$
2	`Sn`	$\lvert d_u\rangle$, $\lvert d_{xz}\rangle$, $\lvert d_{yz}\rangle$, $\lvert d_{xy}\rangle$, $\lvert d_v\rangle$

Table 6: Neighbor and bra-ket of each bond

#	head	tail	neighbor	head (bra)	tail (ket)
1	Mn	Mn	[1]	[d]	[d]
2	Mn	Sn	[1]	[d]	[d]
3	Sn	Sn	[1]	[d]	[d]

Site in Unit Cell

Sites in (conventional) cell (no plus set), SL = sublattice

Table 7: 'Mn' (#1) site cluster (6h), mm2

SL	position ($\boldsymbol{s}$)	mapping
1	[0.83880, 0.67760, 0.25000]	[1,11,16,20]
2	[0.32240, 0.16120, 0.25000]	[2,10,17,19]
3	[0.83880, 0.16120, 0.25000]	[3,12,18,21]
4	[0.16120, 0.32240, 0.75000]	[4,8,13,23]
5	[0.67760, 0.83880, 0.75000]	[5,7,14,22]
6	[0.16120, 0.83880, 0.75000]	[6,9,15,24]

Table 8: 'Sn' (#2) site cluster (2c), -6m2

SL	position (s)	mapping
1	[0.33333, 0.66667, 0.25000]	[1,2,3,10,11,12,16,17,18,19,20,21]
2	[0.66667, 0.33333, 0.75000]	[4,5,6,7,8,9,13,14,15,22,23,24]

Bond in Unit Cell

Bonds in (conventional) cell (no plus set): tail, head = (SL, plus set), (N)D = (non)directional (listed up to 5th neighbor at most)

Table 9: 1-th 'Mn'-'Mn' [1] (#1) bond cluster (6b@6h), ND, $|v|$= 0.4836 (cartesian)

SL	vector (v)	center (c)	mapping	head	tail	R (primitive)
1	[-0.48360, 0.00000, 0.00000]	[0.08060, 0.16120, 0.25000]	[1,-11,16,-20]	(3,1)	(2,1)	[1,0,0]
2	[0.00000,-0.48360, 0.00000]	[0.83880, 0.91940, 0.25000]	[2,-10,17,-19]	(1,1)	(3,1)	[0,1,0]
3	[0.48360, 0.48360, 0.00000]	[0.08060, 0.91940, 0.25000]	[3,-12,18,-21]	(2,1)	(1,1)	[-1,-1,0]
4	[0.48360, 0.00000, 0.00000]	[0.91940, 0.83880, 0.75000]	[4,-8,13,-23]	(6,1)	(5,1)	[-1,0,0]
5	[0.00000, 0.48360, 0.00000]	[0.16120, 0.08060, 0.75000]	[5,-7,14,-22]	(4,1)	(6,1)	[0,-1,0]
6	[-0.48360,-0.48360, 0.00000]	[0.91940, 0.08060, 0.75000]	[6,-9,15,-24]	(5,1)	(4,1)	[1,1,0]

Table 10: 1-th 'Mn'-'Sn' [1] (#2) bond cluster (12a@12j), D, $|\boldsymbol{v}|$= 0.50009 (cartesian)

SL	vector ($\boldsymbol{v}$)	center ($\boldsymbol{c}$)	mapping	head	tail	$\boldsymbol{R}$ (primitive)
1	[-0.49453, 0.01093, 0.00000]	[0.08607, 0.67213, 0.25000]	[1,16]	(1,1)	(1,1)	[1,0,0]
2	[-0.01093,-0.50547, 0.00000]	[0.32787, 0.41393, 0.25000]	[2,17]	(2,1)	(1,1)	[0,0,0]
3	[0.50547, 0.49453, 0.00000]	[0.58607, 0.91393, 0.25000]	[3,18]	(3,1)	(1,1)	[0,-1,0]
4	[0.49453,-0.01093, 0.00000]	[0.91393, 0.32787, 0.75000]	[4,13]	(4,1)	(2,1)	[-1,0,0]
5	[0.01093, 0.50547, 0.00000]	[0.67213, 0.58607, 0.75000]	[5,14]	(5,1)	(2,1)	[0,0,0]
6	[-0.50547,-0.49453, 0.00000]	[0.41393, 0.08607, 0.75000]	[6,15]	(6,1)	(2,1)	[0,1,0]
7	[0.01093,-0.49453, 0.00000]	[0.67213, 0.08607, 0.75000]	[7,22]	(5,1)	(2,1)	[0,1,0]
8	[-0.50547,-0.01093, 0.00000]	[0.41393, 0.32787, 0.75000]	[8,23]	(4,1)	(2,1)	[0,0,0]
9	[0.49453, 0.50547, 0.00000]	[0.91393, 0.58607, 0.75000]	[9,24]	(6,1)	(2,1)	[-1,0,0]
10	[-0.01093, 0.49453, 0.00000]	[0.32787, 0.91393, 0.25000]	[10,19]	(2,1)	(1,1)	[0,-1,0]
11	[0.50547, 0.01093, 0.00000]	[0.58607, 0.67213, 0.25000]	[11,20]	(1,1)	(1,1)	[0,0,0]
12	[-0.49453,-0.50547, 0.00000]	[0.08607, 0.41393, 0.25000]	[12,21]	(3,1)	(1,1)	[1,0,0]

Table 11: 1-th 'Sn'-'Sn' [1] (#3) bond cluster (6a@6g), ND, $|\boldsymbol{v}|$= 0.76376 (cartesian)

SL	vector ($\boldsymbol{v}$)	center ($\boldsymbol{c}$)	mapping	head	tail	$\boldsymbol{R}$ (primitive)
1	[0.33333, 0.66667,-0.50000]	[0.50000, 0.00000, 0.00000]	[1,-8,-13,20]	(2,1)	(1,1)	[0,-1,1]

continued ...

Table 11

SL	vector ($\boldsymbol{v}$)	center ($\boldsymbol{c}$)	mapping	head	tail	$\boldsymbol{R}$ (primitive)
2	[-0.66667,-0.33333,-0.50000]	[0.00000, 0.50000, 0.00000]	[2,-7,-14,19]	(2,1)	(1,1)	[1,0,1]
3	[0.33333,-0.33333,-0.50000]	[0.50000, 0.50000, 0.00000]	[3,-9,-15,21]	(2,1)	(1,1)	[0,0,1]
4	[-0.33333,-0.66667,-0.50000]	[0.50000, 0.00000, 0.50000]	[4,-11,-16,23]	(1,1)	(2,1)	[0,1,0]
5	[0.66667, 0.33333,-0.50000]	[0.00000, 0.50000, 0.50000]	[5,-10,-17,22]	(1,1)	(2,1)	[-1,0,0]
6	[-0.33333, 0.33333,-0.50000]	[0.50000, 0.50000, 0.50000]	[6,-12,-18,24]	(1,1)	(2,1)	[0,0,0]