Model for "Mn3Sn"

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):
  $\boldsymbol{a}_1 = [\ 1.00000, \ 0.00000, \ 0.00000]$
  $\boldsymbol{a}_2 = [-0.50000, \ 0.86603, \ 0.00000]$
  $\boldsymbol{a}_3 = [\ 0.00000, \ 0.00000, \ 1.00000]$

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	$\{m_{001}\|00\frac{1}{2}\}$	17	$\{-6^-_{001}\|00\frac{1}{2}\}$	18	$\{-6^+_{001}\|00\frac{1}{2}\}$	19	$\{m_{110}\|0\}$	20	$\{m_{100}\|0\}$
21	$\{m_{010}\|0\}$	22	$\{m_{1-10}\|00\frac{1}{2}\}$	23	$\{m_{120}\|00\frac{1}{2}\}$	24	$\{m_{210}\|00\frac{1}{2}\}$		

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	-	$\frac{\sqrt{462}(x-y)(x+y)(x^2-4xy+y^2)(x^2+4xy+y^2)}{32}$
5	$\mathbb{G}_0(A_{1u})$	A_{1u}	0	G, M	-	-	1
6	$\mathbb{G}_2(A_{1u})$	A_{1u}	2	G, M	-	-	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$

continued …

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Table 2

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

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Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
28	$\mathbb{Q}_3(B_{2u})$	B_{2u}	3	Q, T	-	-	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
29	$\mathbb{G}_4(B_{2u})$	B_{2u}	4	G, M	-	-	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$
30	$\mathbb{Q}_5(B_{2u})$	B_{2u}	5	Q, T	-	-	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$
31	$\mathbb{Q}_9(B_{2u},1)$	B_{2u}	9	Q, T	1	-	$\frac{\sqrt{24310}x(x^2-3y^2)(x^6-33x^4y^2+27x^2y^4-3y^6)}{256}$
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	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
37	$\mathbb{G}_{3,2}(E_{1g})$					2	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
38	$\mathbb{Q}_{4,1}(E_{1g})$	E_{1g}	4	Q, T	-	1	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$
39	$\mathbb{Q}_{4,2}(E_{1g})$					2	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$
40	$\mathbb{G}_{5,1}(E_{1g},1)$	E_{1g}	5	G, M	1	1	$\frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16}$
41	$\mathbb{G}_{5,2}(E_{1g},1)$					2	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$
42	$\mathbb{Q}_{6,1}(E_{1g},1)$	E_{1g}	6	Q, T	1	1	$\frac{3\sqrt{154}yz(5x^4-10x^2y^2+y^4)}{16}$
43	$\mathbb{Q}_{6,2}(E_{1g},1)$					2	$\frac{3\sqrt{154}xz(x^4-10x^2y^2+5y^4)}{16}$
44	$\mathbb{Q}_{6,1}(E_{1g},2)$	E_{1g}	6	Q, T	2	1	$\frac{\sqrt{21}yz(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4)}{8}$
45	$\mathbb{Q}_{6,2}(E_{1g},2)$					2	$-\frac{\sqrt{21}xz(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4)}{8}$
46	$\mathbb{Q}_{8,1}(E_{1g},1)$	E_{1g}	8	Q, T	1	1	$\frac{3\sqrt{715}yz(7x^6-35x^4y^2+21x^2y^4-y^6)}{32}$
47	$\mathbb{Q}_{8,2}(E_{1g},1)$					2	$-\frac{3\sqrt{715}xz(x^6-21x^4y^2+35x^2y^4-7y^6)}{32}$
48	$\mathbb{Q}_{1,1}(E_{1u})$	E_{1u}	1	Q, T	-	1	x

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
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	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
53	$\mathbb{Q}_{3,2}(E_{1u})$					2	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
54	$\mathbb{G}_{4,1}(E_{1u})$	E_{1u}	4	G, M	-	1	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$
55	$\mathbb{G}_{4,2}(E_{1u})$					2	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$
56	$\mathbb{Q}_{5,1}(E_{1u},1)$	E_{1u}	5	Q, T	1	1	$\frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16}$
57	$\mathbb{Q}_{5,2}(E_{1u},1)$					2	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$
58	$\mathbb{Q}_{5,1}(E_{1u},2)$	E_{1u}	5	Q, T	2	1	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$
59	$\mathbb{Q}_{5,2}(E_{1u},2)$					2	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$
60	$\mathbb{Q}_{7,1}(E_{1u},1)$	E_{1u}	7	Q, T	1	1	$\frac{\sqrt{429}x(x^6-21x^4y^2+35x^2y^4-7y^6)}{32}$
61	$\mathbb{Q}_{7,2}(E_{1u},1)$					2	$\frac{\sqrt{429}y(7x^6-35x^4y^2+21x^2y^4-y^6)}{32}$
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	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$
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	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$
69	$\mathbb{Q}_{4,2}(E_{2g},2)$					2	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$

Table 2

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

Table 3: dimension = 40

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

Table 4: Atomic basis (orbital part only)

orbital	definition
$|d_v\rangle$	$\frac{\sqrt{3}(x^2-y^2)}{2}$
$|d_{xy}\rangle$	$\sqrt{3}xy$
$|d_{xz}\rangle$	$\sqrt{3}xz$
$|d_{yz}\rangle$	$\sqrt{3}yz$
$|d_u\rangle$	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\boxed{\text{z253}} \quad \mathbb{Q}_{4,1}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$$

$$\boxed{\text{z254}} \quad \mathbb{Q}_{4,2}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$$

$$\boxed{\text{z255}} \quad \mathbb{Q}_{4,1}^{(c)}(E_{1g},b) = -\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8}$$

$$\boxed{\text{z256}} \quad \mathbb{Q}_{4,2}^{(c)}(E_{1g},b) = \frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8}$$

$$\boxed{\text{z257}} \quad \mathbb{Q}_{6,1}^{(c)}(E_{1g},1) = -\frac{\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} + \frac{\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$$

z258 $\quad \mathbb{Q}_{6,2}^{(c)}(E_{1g},1) = \dfrac{\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} + \dfrac{\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

z259 $\quad \mathbb{Q}_{1,1}^{(c)}(E_{1u},a) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2}$

z260 $\quad \mathbb{Q}_{1,2}^{(c)}(E_{1u},a) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2}$

z261 $\quad \mathbb{Q}_{1,1}^{(c)}(E_{1u},b) = -\dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_3^{(s)}(B_{1u})}{2}$

z376 $\quad \mathbb{Q}_{1,2}^{(c)}(E_{1u},b) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_3^{(s)}(B_{1u})}{2}$

z377 $\quad \mathbb{Q}_{1,1}^{(c)}(E_{1u},c) = \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14} - \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14} - \dfrac{\sqrt{14}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14}$

z378 $\quad \mathbb{Q}_{1,2}^{(c)}(E_{1u},c) = -\dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14} - \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14} - \dfrac{\sqrt{14}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14}$

z404 $\quad \mathbb{Q}_{1,1}^{(c)}(E_{1u},d) = \dfrac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_3^{(s)}(B_{1u})}{29} + \dfrac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_3^{(s)}(B_{1u})}{58}$

z405 $\quad \mathbb{Q}_{1,2}^{(c)}(E_{1u},d) = -\dfrac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_3^{(s)}(B_{1u})}{29} - \dfrac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_3^{(s)}(B_{1u})}{58}$

z406 $\quad \mathbb{Q}_{3,1}^{(c)}(E_{1u},a) = \dfrac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14} - \dfrac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{7}$

z430 $\quad \mathbb{Q}_{3,2}^{(c)}(E_{1u},a) = -\dfrac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14} - \dfrac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{7}$

z431 $\quad \mathbb{Q}_{3,1}^{(c)}(E_{1u},b) = \dfrac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_3^{(s)}(B_{1u})}{58} - \dfrac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_3^{(s)}(B_{1u})}{29}$

z432 $\quad \mathbb{Q}_{3,2}^{(c)}(E_{1u},b) = -\dfrac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_3^{(s)}(B_{1u})}{58} + \dfrac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_3^{(s)}(B_{1u})}{29}$

z433 $\quad \mathbb{Q}_{3,1}^{(c)}(E_{1u},c) = \dfrac{\sqrt{35}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14} - \dfrac{\sqrt{35}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14} - \dfrac{\sqrt{7}\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{7}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$\boxed{\text{z501}}$ $\quad \mathbb{Q}_{4,1}^{(c)}(E_{2g}, 1b) = \dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z502}}$ $\quad \mathbb{Q}_{4,2}^{(c)}(E_{2g}, 1b) = \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

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

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

$\boxed{\text{z505}}$ $\quad \mathbb{Q}_{4,1}^{(c)}(E_{2g}, 2a) = \dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z506}}$ $\quad \mathbb{Q}_{4,2}^{(c)}(E_{2g}, 2a) = \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z507}}$ $\quad \mathbb{Q}_{4,1}^{(c)}(E_{2g}, 2b) = \dfrac{\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{142} - \dfrac{\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{142} - \dfrac{\sqrt{2485}\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{71}$

$\boxed{\text{z508}}$ $\quad \mathbb{Q}_{4,2}^{(c)}(E_{2g}, 2b) = -\dfrac{\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{142} - \dfrac{\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{142} - \dfrac{\sqrt{2485}\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{71}$

$\boxed{\text{z613}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(E_{2u}, a) = -\dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_3^{(s)}(B_{1u})}{2}$

$\boxed{\text{z614}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(E_{2u}, a) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_3^{(s)}(B_{1u})}{2}$

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

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

$\boxed{\text{z617}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(E_{2u}, c) = \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_3^{(s)}(B_{1u})}{2}$

$\boxed{\text{z618}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(E_{2u},c) = -\dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_3^{(s)}(B_{1u})}{2}$

$\boxed{\text{z619}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(E_{2u},d) = -\dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8} + \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8} - \dfrac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8} + \dfrac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8}$

$\boxed{\text{z620}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(E_{2u},d) = \dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8} + \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8} + \dfrac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8} + \dfrac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8}$

$\boxed{\text{z621}}$ $\quad \mathbb{Q}_{5,1}^{(c)}(E_{2u},1) = -\dfrac{\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2} - \dfrac{\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2}$

$\boxed{\text{z622}}$ $\quad \mathbb{Q}_{5,2}^{(c)}(E_{2u},1) = \dfrac{\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2} - \dfrac{\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2}$

$\boxed{\text{z623}}$ $\quad \mathbb{Q}_{5,1}^{(c)}(E_{2u},2) = \dfrac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8} - \dfrac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8} - \dfrac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8} + \dfrac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8}$

$\boxed{\text{z624}}$ $\quad \mathbb{Q}_{5,2}^{(c)}(E_{2u},2) = -\dfrac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8} - \dfrac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8} + \dfrac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{8} + \dfrac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{8}$

- Sn : 'Sn' site-cluster
  * bra: $\langle d_v|$, $\langle d_{xy}|$, $\langle d_{xz}|$, $\langle d_{yz}|$, $\langle d_u|$
  * ket: $|d_v\rangle$, $|d_{xy}\rangle$, $|d_{xz}\rangle$, $|d_{yz}\rangle$, $|d_u\rangle$
  * wyckoff: 2c

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$\boxed{\text{z407}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(E_{1u}, b) = \dfrac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_3^{(s)}(B_{1u})}{29} + \dfrac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_3^{(s)}(B_{1u})}{58}$

$\boxed{\text{z436}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(E_{1u}, b) = -\dfrac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_3^{(s)}(B_{1u})}{29} - \dfrac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_3^{(s)}(B_{1u})}{58}$

$\boxed{\text{z437}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(E_{1u}) = \dfrac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_3^{(s)}(B_{1u})}{58} - \dfrac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_3^{(s)}(B_{1u})}{29}$

$\boxed{\text{z438}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(E_{1u}) = -\dfrac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_3^{(s)}(B_{1u})}{58} + \dfrac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_3^{(s)}(B_{1u})}{29}$

$\boxed{\text{z509}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(E_{2g}) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

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$\boxed{\text{z510}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g}) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z511}}$ $\quad \mathbb{Q}_{4,1}^{(c)}(E_{2g},1) = \dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z512}}$ $\quad \mathbb{Q}_{4,2}^{(c)}(E_{2g},1) = \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z513}}$ $\quad \mathbb{Q}_{4,1}^{(c)}(E_{2g},2) = \dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z514}}$ $\quad \mathbb{Q}_{4,2}^{(c)}(E_{2g},2) = \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z625}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(E_{2u},a) = -\dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_3^{(s)}(B_{1u})}{2}$

$\boxed{\text{z626}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(E_{2u},a) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_3^{(s)}(B_{1u})}{2}$

$\boxed{\text{z627}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(E_{2u},b) = \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_3^{(s)}(B_{1u})}{2}$

$\boxed{\text{z628}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(E_{2u},b) = -\dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_3^{(s)}(B_{1u})}{2}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$\boxed{\text{z276}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E_{1g}, d) = -\dfrac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{M}_1^{(b)}(A_{2g})}{2}$

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

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

$\boxed{\text{z279}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(E_{1g}, f) = \dfrac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{M}_1^{(b)}(A_{2g})}{2}$

$\boxed{\text{z280}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E_{1g}, f) = -\dfrac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{M}_1^{(b)}(A_{2g})}{2}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$\boxed{\text{z381}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(E_{1u}, b) = -\dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

$\boxed{\text{z382}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(E_{1u}, b) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

$\boxed{\text{z383}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(E_{1u}, c) = \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \dfrac{\sqrt{14}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}$

$\boxed{\text{z384}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(E_{1u}, c) = -\dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \dfrac{\sqrt{14}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}$

$\boxed{\text{z385}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(E_{1u}, d) = \dfrac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_3^{(b)}(B_{1u})}{29} + \dfrac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_3^{(b)}(B_{1u})}{58}$

$\boxed{\text{z408}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(E_{1u}, d) = -\dfrac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_3^{(b)}(B_{1u})}{29} - \dfrac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_3^{(b)}(B_{1u})}{58}$

$\boxed{\text{z409}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(E_{1u}, e) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z410}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(E_{1u}, e) = \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z411}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(E_{1u}, f) = \dfrac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_3^{(b)}(B_{2u})}{2}$

$\boxed{\text{z412}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(E_{1u}, f) = \dfrac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_3^{(b)}(B_{2u})}{2}$

$\boxed{\text{z413}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(E_{1u}, a) = \dfrac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \dfrac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{7}$

$\boxed{\text{z439}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(E_{1u}, a) = -\dfrac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \dfrac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{7}$

$\boxed{\text{z440}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(E_{1u}, b) = \dfrac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_3^{(b)}(B_{1u})}{58} - \dfrac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_3^{(b)}(B_{1u})}{29}$

$\boxed{\text{z441}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(E_{1u}, b) = -\dfrac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_3^{(b)}(B_{1u})}{58} + \dfrac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_3^{(b)}(B_{1u})}{29}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$\boxed{\text{z519}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(E_{2g},c) = -\dfrac{\sqrt{2}\,\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z520}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g},c) = -\dfrac{\sqrt{2}\,\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z521}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(E_{2g},d) = \dfrac{\sqrt{4970}\,\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142} - \dfrac{\sqrt{4970}\,\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142} + \dfrac{\sqrt{142}\,\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142}$

$\boxed{\text{z522}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g},d) = -\dfrac{\sqrt{4970}\,\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142} - \dfrac{\sqrt{4970}\,\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142} + \dfrac{\sqrt{142}\,\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142}$

$\boxed{\text{z523}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(E_{2g},e) = \dfrac{\sqrt{2}\,\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z524}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g},e) = -\dfrac{\sqrt{2}\,\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z525}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(E_{2g},f) = \dfrac{\sqrt{2}\,\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{M}_1^{(b)}(A_{2g})}{2}$

$\boxed{\text{z526}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g},f) = -\dfrac{\sqrt{2}\,\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{M}_1^{(b)}(A_{2g})}{2}$

$\boxed{\text{z527}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(E_{2g},g) = -\dfrac{\sqrt{2}\,\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z528}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g},g) = \dfrac{\sqrt{2}\,\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$

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

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

$\boxed{\text{z531}}$ $\quad \mathbb{Q}_{4,1}^{(c)}(E_{2g},1b) = \dfrac{\sqrt{2}\,\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z532}}$ $\quad \mathbb{Q}_{4,2}^{(c)}(E_{2g},1b) = \dfrac{\sqrt{2}\,\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$\boxed{\text{z22}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g}, d) = \mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{M}_{1}^{(b)}(A_{2g})$

$\boxed{\text{z23}}$ $\mathbb{Q}_{2}^{(c)}(A_{1g}, a) = \mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

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

$\boxed{\text{z25}}$ $\mathbb{Q}_{2}^{(c)}(A_{1g}, c) = \mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{M}_{1}^{(b)}(A_{2g})$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$\boxed{\text{z114}}$ $\quad \mathbb{Q}_7^{(c)}(A_{2u}, 2b) = \dfrac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{2u})}{2} - \dfrac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

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

$\boxed{\text{z116}}$ $\quad \mathbb{G}_6^{(c)}(A_{2u}) = \dfrac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_3^{(b)}(B_{2u})}{2} + \dfrac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_3^{(b)}(B_{1u})}{2}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\boxed{\text{z300}} \quad \mathbb{Q}_{2,1}^{(c)}(E_{1g}, c) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8}$$

$$\boxed{\text{z301}} \quad \mathbb{Q}_{2,2}^{(c)}(E_{1g}, c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} - \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8}$$

$$\boxed{\text{z302}} \quad \mathbb{Q}_{2,1}^{(c)}(E_{1g}, d) = \frac{\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g}, 1)}{2} - \frac{\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{4,1}^{(b)}(E_{2g}, 1)}{2}$$

$$\boxed{\text{z303}} \quad \mathbb{Q}_{2,2}^{(c)}(E_{1g}, d) = -\frac{\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g}, 1)}{2} - \frac{\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{4,2}^{(b)}(E_{2g}, 1)}{2}$$

$$\boxed{\text{z304}} \quad \mathbb{Q}_{2,1}^{(c)}(E_{1g}, e) = \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{M}_1^{(b)}(A_{2g})}{2}$$

$$\boxed{\text{z305}} \quad \mathbb{Q}_{2,2}^{(c)}(E_{1g}, e) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{M}_1^{(b)}(A_{2g})}{2}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$\boxed{\text{z335}}$ $\quad \mathbb{Q}_{8,2}^{(c)}(E_{1g},1) = -\dfrac{\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2} + \dfrac{\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$

$\boxed{\text{z336}}$ $\quad \mathbb{G}_{1,1}^{(c)}(E_{1g}) = \dfrac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z337}}$ $\quad \mathbb{G}_{1,2}^{(c)}(E_{1g}) = \dfrac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z338}}$ $\quad \mathbb{G}_{3,1}^{(c)}(E_{1g}) = \dfrac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z339}}$ $\quad \mathbb{G}_{3,2}^{(c)}(E_{1g}) = \dfrac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z340}}$ $\quad \mathbb{G}_{5,1}^{(c)}(E_{1g},1a) = \dfrac{\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2} + \dfrac{\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}$

$\boxed{\text{z341}}$ $\quad \mathbb{G}_{5,2}^{(c)}(E_{1g},1a) = -\dfrac{\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2} + \dfrac{\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}$

$\boxed{\text{z342}}$ $\quad \mathbb{G}_{5,1}^{(c)}(E_{1g},1b) = \dfrac{\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2} + \dfrac{\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2}$

$\boxed{\text{z343}}$ $\quad \mathbb{G}_{5,2}^{(c)}(E_{1g},1b) = -\dfrac{\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2} + \dfrac{\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2}$

$\boxed{\text{z344}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(E_{1u},a) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z345}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(E_{1u},a) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

$\boxed{\text{z386}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(E_{1u},b) = \dfrac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_3^{(b)}(B_{2u})}{2} - \dfrac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

$\boxed{\text{z387}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(E_{1u},b) = \dfrac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_3^{(b)}(B_{1u})}{2} + \dfrac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_3^{(b)}(B_{2u})}{2}$

$\boxed{\text{z388}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(E_{1u},c) = \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \dfrac{\sqrt{14}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$\boxed{\text{z419}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{1u},b) = -\dfrac{\sqrt{29}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_3^{(b)}(B_{1u})}{58} + \dfrac{\sqrt{203}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_3^{(b)}(B_{1u})}{29} + \dfrac{\sqrt{29}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_3^{(b)}(B_{2u})}{58} + \dfrac{\sqrt{203}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_3^{(b)}(B_{2u})}{29}$

$\boxed{\text{z420}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{1u},c) = \dfrac{\sqrt{35}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \dfrac{\sqrt{35}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \dfrac{\sqrt{7}\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{7}$

$\boxed{\text{z421}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{1u},c) = -\dfrac{\sqrt{35}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \dfrac{\sqrt{35}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \dfrac{\sqrt{7}\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{7}$

$\boxed{\text{z422}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{1u},d) = -\dfrac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{22} + \dfrac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{22} - \dfrac{\sqrt{33}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{11}$

$\boxed{\text{z423}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{1u},d) = \dfrac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{22} + \dfrac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{22} + \dfrac{\sqrt{33}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{11}$

$\boxed{\text{z424}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{1u},e) = -\dfrac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{22} + \dfrac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{22} - \dfrac{\sqrt{33}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{11}$

$\boxed{\text{z425}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{1u},e) = \dfrac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{22} + \dfrac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{22} + \dfrac{\sqrt{33}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{11}$

$\boxed{\text{z448}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{1u},1a) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z449}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{1u},1a) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z450}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{1u},1b) = \dfrac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_3^{(b)}(B_{2u})}{2} + \dfrac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

$\boxed{\text{z451}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{1u},1b) = -\dfrac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_3^{(b)}(B_{1u})}{2} + \dfrac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_3^{(b)}(B_{2u})}{2}$

$\boxed{\text{z452}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{1u},1c) = -\dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z453}}$ $\mathbb{Q}_{5,2}^{(c)}(E_{1u},1c) = -\dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z454}}$ $\mathbb{Q}_{5,1}^{(c)}(E_{1u},1d) = -\dfrac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_3^{(b)}(B_{2u})}{2} - \dfrac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

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$\boxed{\text{z455}}$ $\quad \mathbb{Q}_{5,2}^{(c)}(E_{1u}, 1d) = \dfrac{\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_3^{(b)}(B_{1u})}{2} - \dfrac{\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_3^{(b)}(B_{2u})}{2}$

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

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

$\boxed{\text{z458}}$ $\quad \mathbb{Q}_{5,1}^{(c)}(E_{1u}, 1f) = \dfrac{\sqrt{2}\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u}, 1)}{2}$

$\boxed{\text{z459}}$ $\quad \mathbb{Q}_{5,2}^{(c)}(E_{1u}, 1f) = \dfrac{\sqrt{2}\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u}, 1)}{2}$

$\boxed{\text{z460}}$ $\quad \mathbb{Q}_{5,1}^{(c)}(E_{1u}, 1g) = -\dfrac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_3^{(b)}(B_{2u})}{2} - \dfrac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_3^{(b)}(B_{1u})}{2}$

$\boxed{\text{z472}}$ $\quad \mathbb{Q}_{5,2}^{(c)}(E_{1u}, 1g) = \dfrac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_3^{(b)}(B_{1u})}{2} - \dfrac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_3^{(b)}(B_{2u})}{2}$

$\boxed{\text{z473}}$ $\quad \mathbb{Q}_{5,1}^{(c)}(E_{1u}, 2) = \dfrac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \dfrac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} + \dfrac{\sqrt{70}\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}$

$\boxed{\text{z474}}$ $\quad \mathbb{Q}_{5,2}^{(c)}(E_{1u}, 2) = -\dfrac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \dfrac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} + \dfrac{\sqrt{70}\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}$

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

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

$\boxed{\text{z477}}$ $\quad \mathbb{Q}_{7,1}^{(c)}(E_{1u}, 1b) = \dfrac{\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_3^{(b)}(B_{2u})}{2} - \dfrac{\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

$\boxed{\text{z478}}$ $\quad \mathbb{Q}_{7,2}^{(c)}(E_{1u}, 1b) = \dfrac{\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_3^{(b)}(B_{1u})}{2} + \dfrac{\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_3^{(b)}(B_{2u})}{2}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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z550 $\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g}, e) = -\dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_6^{(b)}(A_{2g})}{2}$

z551 $\quad \mathbb{Q}_{2,1}^{(c)}(E_{2g}, f) = \dfrac{\sqrt{4970}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142} - \dfrac{\sqrt{4970}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142} + \dfrac{\sqrt{142}\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142}$

z552 $\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g}, f) = -\dfrac{\sqrt{4970}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142} - \dfrac{\sqrt{4970}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142} + \dfrac{\sqrt{142}\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142}$

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

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

z555 $\quad \mathbb{Q}_{2,1}^{(c)}(E_{2g}, h) = \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, a)}{2}$

z556 $\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g}, h) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, a)}{2}$

z557 $\quad \mathbb{Q}_{2,1}^{(c)}(E_{2g}, i) = \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, b)}{2}$

z558 $\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g}, i) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, b)}{2}$

z559 $\quad \mathbb{Q}_{2,1}^{(c)}(E_{2g}, j) = \dfrac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{M}_1^{(b)}(A_{2g})}{2}$

z560 $\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g}, j) = -\dfrac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{M}_1^{(b)}(A_{2g})}{2}$

z561 $\quad \mathbb{Q}_{2,1}^{(c)}(E_{2g}, k) = -\dfrac{\sqrt{2}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, a)}{2}$

z562 $\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g}, k) = \dfrac{\sqrt{2}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, a)}{2}$

z563 $\quad \mathbb{Q}_{2,1}^{(c)}(E_{2g}, l) = -\dfrac{\sqrt{2}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g}, b)}{2}$

$\boxed{\text{z564}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E_{2g}, l) = \dfrac{\sqrt{2}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g}, b)}{2}$

$\boxed{\text{z565}}$ $\quad \mathbb{Q}_{4,1}^{(c)}(E_{2g}, 1a) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g}, 1)}{2}$

$\boxed{\text{z566}}$ $\quad \mathbb{Q}_{4,2}^{(c)}(E_{2g}, 1a) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g}, 1)}{2}$

$\boxed{\text{z567}}$ $\quad \mathbb{Q}_{4,1}^{(c)}(E_{2g}, 1b) = -\dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_6^{(b)}(A_{2g})}{2}$

$\boxed{\text{z568}}$ $\quad \mathbb{Q}_{4,2}^{(c)}(E_{2g}, 1b) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_6^{(b)}(A_{2g})}{2}$

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

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

$\boxed{\text{z571}}$ $\quad \mathbb{Q}_{4,1}^{(c)}(E_{2g}, 1d) = -\dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g}, 1)}{2}$

$\boxed{\text{z572}}$ $\quad \mathbb{Q}_{4,2}^{(c)}(E_{2g}, 1d) = -\dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g}, 1)}{2}$

$\boxed{\text{z573}}$ $\quad \mathbb{Q}_{4,1}^{(c)}(E_{2g}, 1e) = \dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z574}}$ $\quad \mathbb{Q}_{4,2}^{(c)}(E_{2g}, 1e) = \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z575}}$ $\quad \mathbb{Q}_{4,1}^{(c)}(E_{2g}, 1f) = \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_6^{(b)}(A_{2g})}{2}$

$\boxed{\text{z576}}$ $\quad \mathbb{Q}_{4,2}^{(c)}(E_{2g}, 1f) = -\dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_6^{(b)}(A_{2g})}{2}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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$\boxed{\text{z592}}$ $\quad \mathbb{G}_{3,2}^{(c)}(E_{2g}) = \dfrac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z653}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(E_{2u},a) = -\dfrac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{2u})}{2} - \dfrac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

$\boxed{\text{z654}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(E_{2u},a) = \dfrac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{1u})}{2} - \dfrac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{2u})}{2}$

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

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

$\boxed{\text{z657}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(E_{2u},c) = \dfrac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{2u})}{2} + \dfrac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

$\boxed{\text{z658}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(E_{2u},c) = -\dfrac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{1u})}{2} + \dfrac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{2u})}{2}$

$\boxed{\text{z659}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(E_{2u},d) = -\dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} - \dfrac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} + \dfrac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8}$

$\boxed{\text{z660}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(E_{2u},d) = \dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} + \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \dfrac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \dfrac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8}$

$\boxed{\text{z661}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(E_{2u},e) = -\dfrac{\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2} - \dfrac{\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z662}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(E_{2u},e) = \dfrac{\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2} - \dfrac{\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

$\boxed{\text{z663}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(E_{2u},f) = -\dfrac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_3^{(b)}(B_{2u})}{2} - \dfrac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_3^{(b)}(B_{1u})}{2}$

$\boxed{\text{z664}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(E_{2u},f) = \dfrac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_3^{(b)}(B_{1u})}{2} - \dfrac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_3^{(b)}(B_{2u})}{2}$

$\boxed{\text{z665}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(E_{2u},g) = \dfrac{\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_3^{(b)}(B_{2u})}{2} + \dfrac{\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_3^{(b)}(B_{1u})}{2}$

z666 $\quad \mathbb{Q}_{3,2}^{(c)}(E_{2u}, g) = -\dfrac{\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_3^{(b)}(B_{1u})}{2} + \dfrac{\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_3^{(b)}(B_{2u})}{2}$

z667 $\quad \mathbb{Q}_{3,1}^{(c)}(E_{2u}, h) = \dfrac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{8} - \dfrac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{8} + \dfrac{\sqrt{6}\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{8} + \dfrac{\sqrt{6}\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{8}$

z668 $\quad \mathbb{Q}_{3,2}^{(c)}(E_{2u}, h) = -\dfrac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{8} - \dfrac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{8} - \dfrac{\sqrt{6}\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{8} + \dfrac{\sqrt{6}\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{8}$

z669 $\quad \mathbb{Q}_{3,1}^{(c)}(E_{2u}, i) = \dfrac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{8} - \dfrac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{8} + \dfrac{\sqrt{6}\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{8} + \dfrac{\sqrt{6}\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{8}$

z670 $\quad \mathbb{Q}_{3,2}^{(c)}(E_{2u}, i) = -\dfrac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{8} - \dfrac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{8} - \dfrac{\sqrt{6}\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{8} + \dfrac{\sqrt{6}\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{8}$

z671 $\quad \mathbb{Q}_{5,1}^{(c)}(E_{2u}, 1a) = -\dfrac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{2u})}{2} + \dfrac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

z672 $\quad \mathbb{Q}_{5,2}^{(c)}(E_{2u}, 1a) = -\dfrac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{1u})}{2} - \dfrac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{2u})}{2}$

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

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

z675 $\quad \mathbb{Q}_{5,1}^{(c)}(E_{2u}, 1c) = \dfrac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{2u})}{2} - \dfrac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

z676 $\quad \mathbb{Q}_{5,2}^{(c)}(E_{2u}, 1c) = \dfrac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{1u})}{2} + \dfrac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_3^{(b)}(B_{2u})}{2}$

z677 $\quad \mathbb{Q}_{5,1}^{(c)}(E_{2u}, 1d) = -\dfrac{\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \dfrac{\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

z678 $\quad \mathbb{Q}_{5,2}^{(c)}(E_{2u}, 1d) = \dfrac{\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} - \dfrac{\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$\boxed{\text{z32}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g},a) = \mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z33}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g},b) = \dfrac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2} + \dfrac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \dfrac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2} + \dfrac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z34}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g},c) = \mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{4}^{(b)}(B_{2g})$

$\boxed{\text{z35}}$ $\mathbb{Q}_{2}^{(c)}(A_{1g},a) = \mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\boxed{\text{z237}} \quad \mathbb{Q}_{2,2}^{(c)}(E_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_0^{(b)}(A_{1g})}{2}$$

$$\boxed{\text{z238}} \quad \mathbb{Q}_{2,1}^{(c)}(E_{1g},c) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_4^{(b)}(B_{2g})}{2}$$

$$\boxed{\text{z239}} \quad \mathbb{Q}_{2,2}^{(c)}(E_{1g},c) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_4^{(b)}(B_{2g})}{2}$$

$$\boxed{\text{z240}} \quad \mathbb{Q}_{2,1}^{(c)}(E_{1g},d) = -\frac{\sqrt{78}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{26} - \frac{\sqrt{78}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{26} + \frac{\sqrt{78}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{26} + \frac{\sqrt{78}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{26} + \frac{\sqrt{26}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{26}$$

$$\boxed{\text{z241}} \quad \mathbb{Q}_{2,2}^{(c)}(E_{1g},d) = \frac{\sqrt{78}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{26} + \frac{\sqrt{78}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{26} + \frac{\sqrt{78}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{26} + \frac{\sqrt{78}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{26} + \frac{\sqrt{26}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{26}$$

$$\boxed{\text{z242}} \quad \mathbb{Q}_{2,1}^{(c)}(E_{1g},e) = -\frac{\sqrt{742}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_4^{(b)}(B_{2g})}{53} + \frac{5\sqrt{106}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_4^{(b)}(B_{2g})}{106}$$

$$\boxed{\text{z243}} \quad \mathbb{Q}_{2,2}^{(c)}(E_{1g},e) = -\frac{\sqrt{742}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_4^{(b)}(B_{2g})}{53} + \frac{5\sqrt{106}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_4^{(b)}(B_{2g})}{106}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$\boxed{\text{z427}}$ $\mathbb{G}_{2,2}^{(c)}(E_{1u},b) = -\dfrac{2\sqrt{21}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_1^{(b)}(A_{2u})}{21} - \dfrac{\sqrt{210}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{42} - \dfrac{\sqrt{210}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{42} + \dfrac{\sqrt{14}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{14}$

$\boxed{\text{z428}}$ $\mathbb{G}_{4,1}^{(c)}(E_{1u}) = -\dfrac{\sqrt{21}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{28} + \dfrac{\sqrt{210}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_1^{(b)}(A_{2u})}{28} + \dfrac{\sqrt{21}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{28} + \dfrac{\sqrt{35}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{14}$

$\boxed{\text{z429}}$ $\mathbb{G}_{4,2}^{(c)}(E_{1u}) = -\dfrac{\sqrt{210}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_1^{(b)}(A_{2u})}{28} + \dfrac{\sqrt{21}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{28} + \dfrac{\sqrt{21}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{28} - \dfrac{\sqrt{35}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{14}$

$\boxed{\text{z461}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{2g},a) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z462}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{2g},a) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

$\boxed{\text{z463}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{2g},b) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z464}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{2g},b) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z485}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{2g},c) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_4^{(b)}(B_{2g})}{2}$

$\boxed{\text{z486}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{2g},c) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_4^{(b)}(B_{2g})}{2}$

$\boxed{\text{z487}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{2g},d) = -\dfrac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{10} + \dfrac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{10} - \dfrac{\sqrt{5}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{5}$

$\boxed{\text{z488}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{2g},d) = \dfrac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{10} + \dfrac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{10} - \dfrac{\sqrt{5}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{5}$

$\boxed{\text{z489}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{2g},e) = -\dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_4^{(b)}(B_{2g})}{2}$

$\boxed{\text{z490}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{2g},e) = -\dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_4^{(b)}(B_{2g})}{2}$

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

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

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

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

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

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

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

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

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

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

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

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

$\boxed{\text{z605}}$ $\mathbb{Q}_{4,1}^{(c)}(E_{2g}, 2c) = -\dfrac{137\sqrt{30747}\,\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{122988} - \dfrac{13\sqrt{430458}\,\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{61494} + \dfrac{137\sqrt{30747}\,\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{122988}$

$\qquad\qquad + \dfrac{13\sqrt{430458}\,\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{61494} - \dfrac{47\sqrt{307470}\,\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{61494} - \dfrac{85\sqrt{215229}\,\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{122988} + \dfrac{85\sqrt{215229}\,\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{122988}$

$\boxed{\text{z606}}$ $\mathbb{Q}_{4,2}^{(c)}(E_{2g}, 2c) = \dfrac{137\sqrt{30747}\,\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{122988} + \dfrac{13\sqrt{430458}\,\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{61494} + \dfrac{137\sqrt{30747}\,\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{122988} + \dfrac{13\sqrt{430458}\,\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{61494}$

$\qquad\qquad - \dfrac{47\sqrt{307470}\,\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{61494} + \dfrac{85\sqrt{215229}\,\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{122988} + \dfrac{85\sqrt{215229}\,\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{122988}$

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

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

$\boxed{\text{z609}}$ $\mathbb{Q}_{6,1}^{(c)}(E_{2g}, 2) = -\dfrac{17\sqrt{11634}\,\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{4155} + \dfrac{11\sqrt{831}\,\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2770} + \dfrac{17\sqrt{11634}\,\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{4155}$

$\qquad\qquad - \dfrac{11\sqrt{831}\,\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2770} + \dfrac{7\sqrt{29085}\,\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{4155} + \dfrac{\sqrt{1662}\,\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{1385} - \dfrac{\sqrt{1662}\,\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{1385}$

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

$\qquad\qquad - \dfrac{11\sqrt{831}\,\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2770} + \dfrac{7\sqrt{29085}\,\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{4155} - \dfrac{\sqrt{1662}\,\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{1385} - \dfrac{\sqrt{1662}\,\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{1385}$

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

$\qquad\qquad - \dfrac{\sqrt{210}\,\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{30} + \dfrac{3\sqrt{3}\,\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{20} - \dfrac{3\sqrt{3}\,\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{20}$

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

$\qquad\qquad - \dfrac{\sqrt{210}\,\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{30} - \dfrac{3\sqrt{3}\,\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{20} - \dfrac{3\sqrt{3}\,\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{20}$

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

$\boxed{\text{z702}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u}, a) = \dfrac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_3^{(b)}(B_{1u})}{2}$

$\boxed{\text{z703}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u}, b) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}$

$\boxed{\text{z704}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u}, b) = \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}$

$\boxed{\text{z705}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u}, c) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{12} - \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{12} - \dfrac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{6} + \dfrac{\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{4} + \dfrac{\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{4}$

$\boxed{\text{z706}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u}, c) = -\dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{12} + \dfrac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{6} - \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{12} - \dfrac{\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{4} + \dfrac{\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{4}$

$\boxed{\text{z707}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u}, d) = \dfrac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_3^{(b)}(B_{1u})}{2}$

$\boxed{\text{z708}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u}, d) = -\dfrac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_3^{(b)}(B_{1u})}{2}$

$\boxed{\text{z709}}$ $\mathbb{Q}_{3,1}^{(c)}(E_{2u}, e) = \dfrac{\sqrt{2}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}$

$\boxed{\text{z710}}$ $\mathbb{Q}_{3,2}^{(c)}(E_{2u}, e) = -\dfrac{\sqrt{2}\mathbb{M}_3^{(a)}(A_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}$

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

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

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

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

$\boxed{\text{z715}}$ $\mathbb{G}_{2,1}^{(c)}(E_{2u}, b) = -\dfrac{\sqrt{21}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{42} + \dfrac{\sqrt{21}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{42} + \dfrac{\sqrt{210}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{42} + \dfrac{\sqrt{35}\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{14} + \dfrac{\sqrt{35}\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{14}$

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

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

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

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

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

— **Atomic SAMB** —

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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$$\boxed{\text{x18}} \quad \mathbb{M}_3^{(a)}(B_{1g}) = \begin{bmatrix} 0 & 0 & \frac{i}{2} & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{2} & 0 \\ -\frac{i}{2} & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x19}} \quad \mathbb{M}_3^{(a)}(B_{2g}) = \begin{bmatrix} 0 & 0 & 0 & -\frac{i}{2} & 0 \\ 0 & 0 & -\frac{i}{2} & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 \\ \frac{i}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

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

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

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

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

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

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

———— **Cluster SAMB** ————————————————————————————————

• Site cluster

** Wyckoff: **2c**

$\boxed{\text{y1}}$ $\mathbb{Q}_0^{(s)}(A_{1g}) = \left[\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2} \right]$

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

** Wyckoff: **6h**

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

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

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

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

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

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

- Bond cluster

** Wyckoff: `6a@6g`

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

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

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

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

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

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

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

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

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

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

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

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

** Wyckoff: `6b@6h`

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

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

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

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

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

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

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

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

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

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

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

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

** Wyckoff: `12a@12j`

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

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

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

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

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

y38 $\quad \mathbb{T}_{3}^{(s)}(B_{1u}) = \left[\dfrac{\sqrt{3}i}{6},\ \dfrac{\sqrt{3}i}{6},\ \dfrac{\sqrt{3}i}{6},\ -\dfrac{\sqrt{3}i}{6},\ -\dfrac{\sqrt{3}i}{6},\ -\dfrac{\sqrt{3}i}{6},\ -\dfrac{\sqrt{3}i}{6},\ -\dfrac{\sqrt{3}i}{6},\ -\dfrac{\sqrt{3}i}{6},\ \dfrac{\sqrt{3}i}{6},\ \dfrac{\sqrt{3}i}{6},\ \dfrac{\sqrt{3}i}{6} \right]$

y39 $\quad \mathbb{Q}_{3}^{(s)}(B_{2u}) = \left[\dfrac{\sqrt{3}}{6},\ \dfrac{\sqrt{3}}{6},\ \dfrac{\sqrt{3}}{6},\ -\dfrac{\sqrt{3}}{6},\ -\dfrac{\sqrt{3}}{6},\ -\dfrac{\sqrt{3}}{6},\ \dfrac{\sqrt{3}}{6},\ \dfrac{\sqrt{3}}{6},\ \dfrac{\sqrt{3}}{6},\ -\dfrac{\sqrt{3}}{6},\ -\dfrac{\sqrt{3}}{6},\ -\dfrac{\sqrt{3}}{6} \right]$

y40 $\quad \mathbb{T}_{3}^{(s)}(B_{2u}) = \left[\dfrac{\sqrt{3}i}{6},\ \dfrac{\sqrt{3}i}{6},\ \dfrac{\sqrt{3}i}{6},\ -\dfrac{\sqrt{3}i}{6},\ -\dfrac{\sqrt{3}i}{6},\ -\dfrac{\sqrt{3}i}{6},\ \dfrac{\sqrt{3}i}{6},\ \dfrac{\sqrt{3}i}{6},\ \dfrac{\sqrt{3}i}{6},\ -\dfrac{\sqrt{3}i}{6},\ -\dfrac{\sqrt{3}i}{6},\ -\dfrac{\sqrt{3}i}{6} \right]$

y41 $\quad \mathbb{Q}^{(s)}_{1,1}(E_{1u}) = \left[\dfrac{5\sqrt{42}}{84}, -\dfrac{\sqrt{42}}{21}, -\dfrac{\sqrt{42}}{84}, -\dfrac{5\sqrt{42}}{84}, \dfrac{\sqrt{42}}{21}, \dfrac{\sqrt{42}}{84}, -\dfrac{\sqrt{42}}{84}, \dfrac{5\sqrt{42}}{84}, -\dfrac{\sqrt{42}}{21}, \dfrac{\sqrt{42}}{84}, -\dfrac{5\sqrt{42}}{84}, \dfrac{\sqrt{42}}{21} \right]$

y42 $\quad \mathbb{Q}^{(s)}_{1,2}(E_{1u}) = \left[\dfrac{\sqrt{14}}{28}, \dfrac{\sqrt{14}}{14}, -\dfrac{3\sqrt{14}}{28}, -\dfrac{\sqrt{14}}{28}, -\dfrac{\sqrt{14}}{14}, \dfrac{3\sqrt{14}}{28}, \dfrac{3\sqrt{14}}{28}, -\dfrac{\sqrt{14}}{28}, -\dfrac{\sqrt{14}}{14}, -\dfrac{3\sqrt{14}}{28}, \dfrac{\sqrt{14}}{28}, \dfrac{\sqrt{14}}{14} \right]$

y43 $\quad \mathbb{T}^{(s)}_{1,1}(E_{1u}, a) = \left[\dfrac{5\sqrt{42}i}{84}, -\dfrac{\sqrt{42}i}{21}, -\dfrac{\sqrt{42}i}{84}, -\dfrac{5\sqrt{42}i}{84}, \dfrac{\sqrt{42}i}{21}, \dfrac{\sqrt{42}i}{84}, -\dfrac{\sqrt{42}i}{84}, \dfrac{5\sqrt{42}i}{84}, -\dfrac{\sqrt{42}i}{21}, \dfrac{\sqrt{42}i}{84}, -\dfrac{5\sqrt{42}i}{84}, \dfrac{\sqrt{42}i}{21} \right]$

y44 $\quad \mathbb{T}^{(s)}_{1,2}(E_{1u}, a) = \left[\dfrac{\sqrt{14}i}{28}, \dfrac{\sqrt{14}i}{14}, -\dfrac{3\sqrt{14}i}{28}, -\dfrac{\sqrt{14}i}{28}, -\dfrac{\sqrt{14}i}{14}, \dfrac{3\sqrt{14}i}{28}, \dfrac{3\sqrt{14}i}{28}, -\dfrac{\sqrt{14}i}{28}, -\dfrac{\sqrt{14}i}{14}, -\dfrac{3\sqrt{14}i}{28}, \dfrac{\sqrt{14}i}{28}, \dfrac{\sqrt{14}i}{14} \right]$

y45 $\quad \mathbb{T}^{(s)}_{1,1}(E_{1u}, b) = \left[\dfrac{\sqrt{14}i}{28}, \dfrac{\sqrt{14}i}{14}, -\dfrac{3\sqrt{14}i}{28}, -\dfrac{\sqrt{14}i}{28}, -\dfrac{\sqrt{14}i}{14}, \dfrac{3\sqrt{14}i}{28}, -\dfrac{3\sqrt{14}i}{28}, \dfrac{\sqrt{14}i}{28}, \dfrac{\sqrt{14}i}{14}, \dfrac{3\sqrt{14}i}{28}, -\dfrac{\sqrt{14}i}{28}, -\dfrac{\sqrt{14}i}{14} \right]$

y46 $\quad \mathbb{T}^{(s)}_{1,2}(E_{1u}, b) = \left[-\dfrac{5\sqrt{42}i}{84}, \dfrac{\sqrt{42}i}{21}, \dfrac{\sqrt{42}i}{84}, \dfrac{5\sqrt{42}i}{84}, -\dfrac{\sqrt{42}i}{21}, -\dfrac{\sqrt{42}i}{84}, -\dfrac{\sqrt{42}i}{84}, \dfrac{5\sqrt{42}i}{84}, -\dfrac{\sqrt{42}i}{21}, \dfrac{\sqrt{42}i}{84}, -\dfrac{5\sqrt{42}i}{84}, \dfrac{\sqrt{42}i}{21} \right]$

y47 $\quad \mathbb{Q}^{(s)}_{5,1}(E_{1u}, 1) = \left[\dfrac{\sqrt{14}}{28}, \dfrac{\sqrt{14}}{14}, -\dfrac{3\sqrt{14}}{28}, -\dfrac{\sqrt{14}}{28}, -\dfrac{\sqrt{14}}{14}, \dfrac{3\sqrt{14}}{28}, -\dfrac{3\sqrt{14}}{28}, \dfrac{\sqrt{14}}{28}, \dfrac{\sqrt{14}}{14}, \dfrac{3\sqrt{14}}{28}, -\dfrac{\sqrt{14}}{28}, -\dfrac{\sqrt{14}}{14} \right]$

y48 $\quad \mathbb{Q}^{(s)}_{5,2}(E_{1u}, 1) = \left[-\dfrac{5\sqrt{42}}{84}, \dfrac{\sqrt{42}}{21}, \dfrac{\sqrt{42}}{84}, \dfrac{5\sqrt{42}}{84}, -\dfrac{\sqrt{42}}{21}, -\dfrac{\sqrt{42}}{84}, -\dfrac{\sqrt{42}}{84}, \dfrac{5\sqrt{42}}{84}, -\dfrac{\sqrt{42}}{21}, \dfrac{\sqrt{42}}{84}, -\dfrac{5\sqrt{42}}{84}, \dfrac{\sqrt{42}}{21} \right]$

y49 $\quad \mathbb{Q}^{(s)}_{2,1}(E_{2g}) = \left[\dfrac{11\sqrt{6}}{84}, \dfrac{\sqrt{6}}{42}, -\dfrac{13\sqrt{6}}{84}, \dfrac{11\sqrt{6}}{84}, \dfrac{\sqrt{6}}{42}, -\dfrac{13\sqrt{6}}{84}, -\dfrac{13\sqrt{6}}{84}, \dfrac{11\sqrt{6}}{84}, \dfrac{\sqrt{6}}{42}, -\dfrac{13\sqrt{6}}{84}, \dfrac{11\sqrt{6}}{84}, \dfrac{\sqrt{6}}{42} \right]$

y50 $\quad \mathbb{Q}^{(s)}_{2,2}(E_{2g}) = \left[-\dfrac{5\sqrt{2}}{28}, \dfrac{2\sqrt{2}}{7}, -\dfrac{3\sqrt{2}}{28}, -\dfrac{5\sqrt{2}}{28}, \dfrac{2\sqrt{2}}{7}, -\dfrac{3\sqrt{2}}{28}, \dfrac{3\sqrt{2}}{28}, \dfrac{5\sqrt{2}}{28}, -\dfrac{2\sqrt{2}}{7}, \dfrac{3\sqrt{2}}{28}, \dfrac{5\sqrt{2}}{28}, -\dfrac{2\sqrt{2}}{7} \right]$

y51 $\quad \mathbb{T}^{(s)}_{2,1}(E_{2g}, a) = \left[\dfrac{11\sqrt{6}i}{84}, \dfrac{\sqrt{6}i}{42}, -\dfrac{13\sqrt{6}i}{84}, \dfrac{11\sqrt{6}i}{84}, \dfrac{\sqrt{6}i}{42}, -\dfrac{13\sqrt{6}i}{84}, -\dfrac{13\sqrt{6}i}{84}, \dfrac{11\sqrt{6}i}{84}, \dfrac{\sqrt{6}i}{42}, -\dfrac{13\sqrt{6}i}{84}, \dfrac{11\sqrt{6}i}{84}, \dfrac{\sqrt{6}i}{42} \right]$

y52 $\quad \mathbb{T}^{(s)}_{2,2}(E_{2g}, a) = \left[-\dfrac{5\sqrt{2}i}{28}, \dfrac{2\sqrt{2}i}{7}, -\dfrac{3\sqrt{2}i}{28}, -\dfrac{5\sqrt{2}i}{28}, \dfrac{2\sqrt{2}i}{7}, -\dfrac{3\sqrt{2}i}{28}, \dfrac{3\sqrt{2}i}{28}, \dfrac{5\sqrt{2}i}{28}, -\dfrac{2\sqrt{2}i}{7}, \dfrac{3\sqrt{2}i}{28}, \dfrac{5\sqrt{2}i}{28}, -\dfrac{2\sqrt{2}i}{7} \right]$

y53 $\quad \mathbb{T}^{(s)}_{2,1}(E_{2g}, b) = \left[\dfrac{5\sqrt{2}i}{28}, -\dfrac{2\sqrt{2}i}{7}, \dfrac{3\sqrt{2}i}{28}, \dfrac{5\sqrt{2}i}{28}, -\dfrac{2\sqrt{2}i}{7}, \dfrac{3\sqrt{2}i}{28}, \dfrac{3\sqrt{2}i}{28}, \dfrac{5\sqrt{2}i}{28}, -\dfrac{2\sqrt{2}i}{7}, \dfrac{3\sqrt{2}i}{28}, \dfrac{5\sqrt{2}i}{28}, -\dfrac{2\sqrt{2}i}{7} \right]$

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y54　$\mathbb{T}^{(s)}_{2,2}(E_{2g}, b) = \left[\dfrac{11\sqrt{6}i}{84}, \dfrac{\sqrt{6}i}{42}, -\dfrac{13\sqrt{6}i}{84}, \dfrac{11\sqrt{6}i}{84}, \dfrac{\sqrt{6}i}{42}, -\dfrac{13\sqrt{6}i}{84}, \dfrac{13\sqrt{6}i}{84}, -\dfrac{11\sqrt{6}i}{84}, -\dfrac{\sqrt{6}i}{42}, \dfrac{13\sqrt{6}i}{84}, -\dfrac{11\sqrt{6}i}{84}, -\dfrac{\sqrt{6}i}{42}\right]$

y55　$\mathbb{Q}^{(s)}_{4,1}(E_{2g}, 1) = \left[\dfrac{5\sqrt{2}}{28}, -\dfrac{2\sqrt{2}}{7}, \dfrac{3\sqrt{2}}{28}, \dfrac{5\sqrt{2}}{28}, -\dfrac{2\sqrt{2}}{7}, \dfrac{3\sqrt{2}}{28}, \dfrac{3\sqrt{2}}{28}, \dfrac{5\sqrt{2}}{28}, -\dfrac{2\sqrt{2}}{7}, \dfrac{3\sqrt{2}}{28}, \dfrac{5\sqrt{2}}{28}, -\dfrac{2\sqrt{2}}{7}\right]$

y56　$\mathbb{Q}^{(s)}_{4,2}(E_{2g}, 1) = \left[\dfrac{11\sqrt{6}}{84}, \dfrac{\sqrt{6}}{42}, -\dfrac{13\sqrt{6}}{84}, \dfrac{11\sqrt{6}}{84}, \dfrac{\sqrt{6}}{42}, -\dfrac{13\sqrt{6}}{84}, \dfrac{13\sqrt{6}}{84}, -\dfrac{11\sqrt{6}}{84}, -\dfrac{\sqrt{6}}{42}, \dfrac{13\sqrt{6}}{84}, -\dfrac{11\sqrt{6}}{84}, -\dfrac{\sqrt{6}}{42}\right]$

— **Site and Bond** —

Table 5: Orbital of each site

#	site	orbital
1	Mn	$\lvert d_v\rangle, \lvert d_{xy}\rangle, \lvert d_{xz}\rangle, \lvert d_{yz}\rangle, \lvert d_u\rangle$
2	Sn	$\lvert d_v\rangle, \lvert d_{xy}\rangle, \lvert d_{xz}\rangle, \lvert d_{yz}\rangle, \lvert d_u\rangle$

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 (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, $|v| = 0.50009$ (cartesian)

SL	vector (v)	center (c)	mapping	head	tail	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]

Table 10

SL	vector (v)	center (c)	mapping	head	tail	R (primitive)
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, $|v|$= 0.76376 (cartesian)

SL	vector (v)	center (c)	mapping	head	tail	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]
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]