APPENDIX A

DERIVATION OF THE MOMENT $E\ d_{1j}^{\ k}$

The expected value of d_{1j} can be obtained as follows:

$$
\begin{aligned}
E\ d_{1j}\ &= \sum_{d_{1j}=1}^{\min(d_j,n_{1j})} d_{1j} P\ d_{1j} \\
&= \sum_{d_{1j}=1}^{\min(d_j,n_{1j})} d_{1j} \frac{\binom{d_j}{d_{1j}}\binom{n_j-d_j}{n_{1j}-d_{1j}}}{\binom{n_j}{n_{1j}}} \\
&= \sum_{d_{1j}=1}^{\min(d_j,n_{1j})} d_{1j} \frac{d_j!}{d_{1j}!(d_j-d_{1j})!}\cdot\frac{(n_j-d_j)!}{(n_{1j}-d_{1j})!(n_j-d_j-n_{1j}+d_{ij})!}}{\frac{n_j!}{n_{1j}!(n_j-n_{1j})!}} \\
&= \sum_{d_{1j}=1}^{\min(d_j,n_{1j})} \frac{d_j\frac{(d_j-1)!}{(d_{1j}-1)![(d_j-1)-(d_{1j}-1)]!}}{\frac{n_j}{n_{1j}}\cdot\frac{(n_j-1)!}{(n_{1j}-1)![(n_j-1)-(n_{1j}-1)]!}}\cdot \\
&\qquad \frac{[(n_j-1)-(d_j-1)]!}{[(n_{1j}-1)-(d_{1j}-1)]![(n_j-1)-(d_j-1)-(n_{1j}-1)+(d_{1j}-1)]!} \\
&= \frac{d_j}{\frac{n_j}{n_{1j}}} \sum_{d_{1j}-1=0}^{\min(d_j-1,n_{1j}-1)} \frac{\frac{(d_j-1)!}{(d_{1j}-1)![(d_j-1)-(d_{1j}-1)]!}}{\frac{(n_j-1)!}{(n_{1j}-1)![(n_j-1)-(n_{1j}-1)]!}}\cdot \\
&\qquad \frac{[(n_j-1)-(d_j-1)]!}{[(n_{1j}-1)-(d_{1j}-1)]![(n_j-1)-(d_j-1)-(n_{1j}-1)+(d_{1j}-1)]!} \\
&= \frac{n_{1j}d_j}{n_j} \\
&= e_{1j}\,.
\end{aligned}
\tag{A.1}
$$

Since $$E\ d_{1j}(d_{1j}-1)\ = E\ d_{1j}^{\ 2}\ - E\ d_{1j}\ ,\tag{A.2}$$

we have

$$
\begin{aligned}
E\ d_{1j}^{\ 2}\ &= E\ d_{1j}\ - E\left[\,d_{1j}(d_{1j}-1)\right] \\
&= \frac{n_{1j}d_j}{n_j} + \sum_{d_{1j}=2}^{\min(d_j,n_{1j})} d_{1j}(d_{1j}-1)\frac{\binom{d_j}{d_{1j}}\binom{n_j-d_j}{n_{1j}-d_{1j}}}{\binom{n_j}{n_{1j}}} \\
&= \frac{n_{1j}d_j}{n_j} + \sum_{d_{1j}=2}^{\min(d_j,n_{1j})} d_{1j}(d_{1j}-1)\frac{\frac{d_j!}{d_{1j}!(d_j-d_{1j})!}}{\frac{n_j!}{n_{1j}!(n_j-n_{1j})!}}\cdot\frac{(n_j-d_j)!}{(n_{1j}-d_{1j})!(n_j-d_j-n_{1j}+d_{1j})!}
\end{aligned}
$$

$$= \frac{n_{1j} d_j}{n_j} + \sum_{d_{1j}=2}^{\min(d_j, n_{1j})} \frac{d_j (d_j - 1) \dfrac{(d_j - 2)!}{(d_{1j} - 2)![(d_j - 2) - (d_{1j} - 2)]!}}{\dfrac{n_j (n_j - 1)}{n_{1j} (n_{1j} - 1)} \cdot \dfrac{(n_j - 2)!}{(n_{1j} - 2)![(n_j - 2) - (n_{1j} - 2)]!}} \cdot$$

$$\frac{[(n_j - 2) - (d_j - 2)]!}{[(n_{1j} - 2) - (d_{1j} - 2)]![(n_j - 2) - (d_j - 2) - (n_{1j} - 2) + (d_{1j} - 2)]!}$$

$$= \frac{n_{1j} d_j}{n_j}$$

$$+ \frac{n_{1j} (n_{1j} - 1)\, d_j (d_j - 1)}{n_j (n_j - 1)} \sum_{d_{1j}=2}^{\min(d_j, n_{1j})} \frac{\dfrac{(d_j - 2)!}{(d_{1j} - 2)![(d_j - 2) - (d_{1j} - 2)]!}}{\dfrac{(n_j - 2)!}{(n_{1j} - 2)![(n_j - 2) - (n_{1j} - 2)]!}} \cdot$$

$$\frac{[(n_j - 2) - (d_j - 2)]!}{[(n_{1j} - 2) - (d_{1j} - 2)]![(n_j - 2) - (d_j - 2) - (n_{1j} - 2) + (d_{1j} - 2)]!}$$

$$= \frac{n_{1j} d_j}{n_j} + \frac{n_{1j} (n_{1j} - 1)\, d_j (d_j - 1)}{n_j (n_j - 1)} . \qquad \text{(A.3)}$$

Since

$$\begin{aligned} E\left[d_{1j} (d_{1j} - 1)(d_{1j} - 2) \right] &= E\left[d_{1j} ({d_{1j}}^2 - 3 d_{1j} + 2) \right] \\ &= E\left[{d_{1j}}^3 - 3 {d_{1j}}^2 + 2 d_{1j} \right] \\ &= E\ {d_{1j}}^3 - 3E\ {d_{1j}}^2 + 2E\ d_{1j} , \end{aligned} \qquad \text{(A.4)}$$

we get

$$E\ {d_{1j}}^3 = 3E\ {d_{1j}}^2 - 2E\ d_{1j} + E\left[d_{1j} (d_{1j} - 1)(d_{1j} - 2) \right]$$

$$= 3\left[E\ d_{1j} + \frac{n_{1j} (n_{1j} - 1) d_j (d_j - 1)}{n_j (n_j - 1)} \right] - 2E\ d_{1j} + \sum_{d_{1j}=3}^{\min(d_j, n_{1j})} d_{1j} (d_{1j} - 1)(d_{1j} - 2) \frac{\binom{d_j}{d_{1j}} \binom{n_j - d_j}{n_{1j} - d_{1j}}}{\binom{n_j}{n_{1j}}}$$

$$= E\ d_{1j} + \frac{3 n_{1j} (n_{1j} - 1) d_j (d_j - 1)}{n_j (n_j - 1)}$$

$$+ \sum_{d_{1j}=2}^{\min(d_j, n_{1j})} d_{1j} (d_{1j} - 1)(d_{1j} - 2) \frac{\dfrac{d_j !}{d_{1j} !(d_j - d_{1j})!}}{\dfrac{n_j !}{n_{1j} !(n_j - n_{1j})!}} \cdot \frac{(n_j - d_j)!}{(n_{1j} - d_{1j})!(n_j - d_j - n_{1j} + d_{1j})!}$$

$$= \frac{n_{1j} d_j}{n_j} + \frac{3 n_{1j} (n_{1j} - 1) d_j (d_j - 1)}{n_j (n_j - 1)}$$

$$+ \sum_{d_{1j}=2}^{\min(d_j, n_{1j})} d_j (d_j - 1)(d_j - 2) \frac{\dfrac{(d_j - 3)!}{(d_{1j} - 3)![(d_j - 3) - (d_{1j} - 3)]!}}{\dfrac{n_j (n_j - 1)(n_j - 2)}{n_{1j} (n_{1j} - 1)(n_{1j} - 2)} \cdot \dfrac{(n_j - 3)!}{(n_{1j} - 3)![(n_j - 3) - (n_{1j} - 3)]!}} \cdot$$

$$\frac{[(n_j - 3) - (d_j - 3)]!}{[(n_{1j} - 3) - (d_{1j} - 3)]![(n_j - 3) - (d_j - 3) - (n_{1j} - 3) + (d_{1j} - 3)]!}$$

$$= \frac{n_{1j}d_j}{n_j} + \frac{3n_{1j}(n_{1j}-1)d_j(d_j-1)}{n_j(n_j-1)} + \frac{n_{1j}(n_{1j}-1)(n_{1j}-2)d_j(d_j-1)(d_j-2)}{n_j(n_j-1)(n_j-2)} \cdot$$

$$\sum_{d_{1j}=2}^{\min(d_j,n_{1j})} \frac{\dfrac{(d_j-3)!}{(d_{1j}-3)![(d_j-3)-(d_{1j}-3)]!}}{\dfrac{n_j(n_j-1)(n_j-2)}{n_{1j}(n_{1j}-1)(n_{1j}-2)} \cdot \dfrac{(n_j-3)!}{(n_{1j}-3)![(n_j-3)-(n_{1j}-3)]!}} \cdot$$

$$\frac{[(n_j-3)-(d_j-3)]!}{[(n_{1j}-3)-(d_{1j}-3)]![(n_j-3)-(d_j-3)-(n_{1j}-3)+(d_{1j}-3)]!}$$

$$= \frac{n_{1j}d_j}{n_j} + \frac{3n_{1j}(n_{1j}-1)d_j(d_j-1)}{n_j(n_j-1)} + \frac{n_{1j}(n_{1j}-1)(n_{1j}-2)d_j(d_j-1)(d_j-2)}{n_j(n_j-1)(n_j-2)}. \quad \text{(A.5)}$$

Similarly, since

$$\begin{aligned} E\left[d_{1j}(d_{1j}-1)(d_{1j}-2)(d_{1j}-3)\right] &= E\left[({d_{1j}}^2-d_{1j})({d_{1j}}^2-5d_{1j}+6)\right] \\ &= E\left[{d_{1j}}^4-6{d_{1j}}^3+11{d_{1j}}^2-6d_{1j}\right] \\ &= E\ {d_{1j}}^4 - 6E\ {d_{1j}}^3 + 11E\ {d_{1j}}^2 - 6E\ d_{1j}\ , \end{aligned} \quad \text{(A.6)}$$

we have

$$E\ {d_{1j}}^4 = 6E\ {d_{1j}}^3 - 11E\ {d_{1j}}^2 + 6E\ d_{1j} + E\left[d_{1j}(d_{1j}-1)(d_{1j}-2)(d_{1j}-3)\right]$$

$$= 6\left[E\ d_{1j} + 3\frac{n_{1j}(n_{1j}-1)d_j(d_j-1)}{n_j(n_j-1)} + \frac{n_{1j}(n_{1j}-1)(n_{1j}-2)d_j(d_j-1)(d_j-2)}{n_j(n_j-1)(n_j-2)}\right]$$

$$-11\left[E\ d_{1j} + \frac{n_{1j}(n_{1j}-1)d_j(d_j-1)}{n_j(n_j-1)}\right] + 6E\left(d_{1j}\right)$$

$$+ \sum_{d_{1j}=4}^{\min(d_j,n_{1j})} d_{1j}(d_{1j}-1)(d_{1j}-2)(d_{1j}-3)\frac{\binom{d_j}{d_{1j}}\binom{n_j-d_j}{n_{1j}-d_{1j}}}{\binom{n_j}{n_{1j}}}$$

$$= E\left(d_{1j}\right) + 7\frac{n_{1j}(n_{1j}-1)d_j(d_j-1)}{n_j(n_j-1)} + 6\frac{n_{1j}(n_{1j}-1)(n_{1j}-2)d_j(d_j-1)(d_j-2)}{n_j(n_j-1)(n_j-2)}$$

$$+ \sum_{d_{1j}=4}^{\min(d_j,n_{1j})} d_{1j}(d_{1j}-1)(d_{1j}-2)(d_{1j}-3)\frac{\dfrac{d_j!}{d_{1j}!(d_j-d_{1j})!}}{\dfrac{n_j!}{n_{1j}!(n_j-n_{1j})!}} \cdot \frac{(n_j-d_j)!}{(n_{1j}-d_{1j})!(n_j-d_j-n_{1j}+d_{1j})!}$$

$$= \frac{n_{1j}d_j}{n_j} + 7\frac{n_{1j}(n_{1j}-1)d_j(d_j-1)}{n_j(n_j-1)} + 6\frac{n_{1j}(n_{1j}-1)(n_{1j}-2)d_j(d_j-1)(d_j-2)}{n_j(n_j-1)(n_j-2)}$$

$$+ \sum_{d_{1j}=4}^{\min(d_j,n_{1j})} \frac{d_j(d_j-1)(d_j-2)(d_j-3)}{n_j(n_j-1)(n_j-2)(n_j-3)} \cdot \frac{\dfrac{(d_j-4)!}{(d_{1j}-4)![(d_j-4)-(d_{1j}-4)]!}}{\dfrac{(n_j-4)!}{(n_{1j}-4)![(n_j-4)-(n_{1j}-4)!}} \cdot$$

$$\frac{[(n_j-4)-(d_j-4)]!}{[(n_{1j}-4)-(d_{1j}-4)]![(n_j-4)-(d_j-4)-(n_{1j}-4)+(d_{1j}-4)]!}$$

$$= \frac{n_{1j}d_j}{n_j} + 7\frac{n_{1j}(n_{1j}-1)d_j(d_j-1)}{n_j(n_j-1)} + 6\frac{n_{1j}(n_{1j}-1)(n_{1j}-2)d_j(d_j-1)(d_j-2)}{n_j(n_j-1)(n_j-2)}$$

$$+ \frac{d_j(d_j-1)(d_j-2)(d_j-3)}{n_j(n_j-1)(n_j-2)(n_j-3)} \Bigg/ \frac{n_{1j}(n_{1j}-1)(n_{1j}-2)(n_{1j}-3)}{} \sum_{d_{1j}=4}^{\min(d_j,n_{1j})} \frac{\dfrac{(d_j-4)!}{(d_{1j}-4)![(d_j-4)-(d_{1j}-4)]!}}{\dfrac{(n_j-4)!}{(n_{1j}-4)![(n_j-4)-(n_{1j}-4)!}} \cdot$$

$$\frac{[(n_j-4)-(d_j-4)]!}{[(n_{1j}-4)-(d_{1j}-4)]![(n_j-4)-(d_j-4)-(n_{1j}-4)+(d_{1j}-4)]!}$$

$$= \frac{n_{1j}d_j}{n_j} + 7\frac{n_{1j}(n_{1j}-1)d_j(d_j-1)}{n_j(n_j-1)} + 6\frac{n_{1j}(n_{1j}-1)(n_{1j}-2)d_j(d_j-1)(d_j-2)}{n_j(n_j-1)(n_j-2)}$$

$$+ \frac{n_{1j}(n_{1j}-1)(n_{1j}-2)(n_{1j}-3)d_j(d_j-1)(d_j-2)(d_j-3)}{n_j(n_j-1)(n_j-2)(n_j-3)} . \qquad \text{(A.7)}$$

APPENDIX B

EVALUATION OF THE MOMENT $E\ w_0^{\,l_0}\ w_1^{\,l_1}\ w_2^{\,l_2}\ w_3^{\,l_3}\ w_4^{\,l_4}$

Let

$$J\ j_1, j_2\ = E\ T^{j_1\gamma}\ \log T\ ^{j_2}\ , \tag{B.1}$$

where T~Weibull (γ, λ) and $I(k_1, k_2) = \int_0^\infty u^{k_1} (\log u)^{k_2} e^{-u} du$.

For $0 \le j_1 \le 4$ and $0 \le j_2 \le 12$, it can be shown that

$$J\ 0,1\ = \frac{1}{\gamma}\ I(0,1) - \log\lambda\, I(0,0)\ , \tag{B.2}$$

$$J\ 0,2\ = \frac{1}{\gamma^2}\left[I(0,2) - 2\log\lambda\, I(0,1) + \log\lambda\ ^2\, I(0,0) \right], \tag{B.3}$$

$$J\ 0,3\ = \frac{1}{\gamma^3}\left[I(0,3) - 3\log\lambda\, I(0,2) + 3\ \log\lambda\ ^2\, I(0,1) - \log\lambda\ ^3\, I(0,0) \right], \tag{B.4}$$

$$J\ 0,4\ = \frac{1}{\gamma^4}\left[I(0,4) - 4\log\lambda\, I(0,3) + 6\ \log\lambda\ ^2\, I(0,2) - 4\ \log\lambda\ ^3\, I(0,1) + \log\lambda\ ^4\, I(0,0) \right], \tag{B.5}$$

$$J\ 1,0\ = \frac{1}{\lambda} I(1,0)\ , \tag{B.6}$$

$$J\ 1,1\ = \frac{1}{\lambda\gamma}\ I(1,1) - \log\lambda\, I(1,0)\ , \tag{B.7}$$

$$J\ 1,2\ = \frac{1}{\lambda\gamma^2}\left[I(1,2) - 2\log\lambda\, I(1,1) + \log\lambda\ ^2\, I(1,0) \right], \tag{B.8}$$

$$J\ 1,3\ = \frac{1}{\lambda\gamma^3}\left[I(1,3) - 3\log\lambda\, I(1,2) + 3\ \log\lambda\ ^2\, I(1,1) - \log\lambda\ ^3\, I(1,0) \right], \tag{B.9}$$

$$J\ 1,4\ = \frac{1}{\lambda\gamma^4}\left[I(1,4) - 4\log\lambda\, I(1,3) + 6\ \log\lambda\ ^2\, I(1,2) - 4\ \log\lambda\ ^3\, I(1,1) + \log\lambda\ ^4\, I(1,0) \right], \tag{B.10}$$

$$J\ 1,5\ = \frac{1}{\lambda\gamma^5}\left[I(1,5) - 5\log\lambda\, I(1,4) + 10\ \log\lambda\ ^2\, I(1,3) - 10\ \log\lambda\ ^3\, I(1,2) + 5\ \log u\ ^4\, I(1,1) - \log u\ ^5\, I(1,0) \right], \tag{B.11}$$

$$J\ 1,6\ = \frac{1}{\lambda\gamma^6}\left[I(2,6) - 6\log\lambda\, I(1,5) + 15\ \log\lambda\ ^2\, I(1,4) - 20\ \log\lambda\ ^3\, I(1,3) + 15\ \log u\ ^4\, I(1,2) - 6\ \log u\ ^5\, I(1,1) + \log u\ ^6\, I(1,0) \right], \tag{B.12}$$

$$J\ 2,0\ = \frac{1}{\lambda^2} I(2,0)\ , \tag{B.13}$$

$$J\ 2,1\ = \frac{1}{\lambda^2\gamma}\ I(2,1) - \log\lambda\, I(2,0)\ , \tag{B.14}$$

$$J\ 2,2\ = \frac{1}{\lambda^2\gamma^2}\left[I(2,2) - 2\log\lambda\, I(2,1) + \log\lambda\ ^2\, I(2,0) \right], \tag{B.15}$$

$$J\ 2,3\ = \frac{1}{\lambda^2\gamma^3}\left[I(2,3) - 3\log\lambda\, I(2,2) + 3\ \log\lambda\ ^2\, I(2,1) - \log\lambda\ ^3\, I(2,0) \right], \tag{B.16}$$

$$J\ 2,4\ = \frac{1}{\lambda^2\gamma^4}\left[I(2,4) - 4\log\lambda\, I(2,3) + 6\ \log\lambda\ ^2\, I(2,2) - 4\ \log\lambda\ ^3\, I(2,1) + \log\lambda\ ^4\, I(2,0) \right], \tag{B.17}$$

$$J\ 2,5\ = \frac{1}{\lambda^2\gamma^5}\left[I(2,5) - 5\log\lambda\, I(2,4) + 10\ \log\lambda\ ^2\, I(2,3) - 10\ \log\lambda\ ^3\, I(2,2) + 5\ \log u\ ^4\, I(2,1) \right.$$

$$- \log u^{5} I(2,0)\Big], \tag{B.18}$$

$$J(2,6) = \frac{1}{\lambda^2\gamma^6}\Big[I(2,6) - 6\log\lambda\, I(2,5) + 15\log\lambda^{2} I(2,4) - 20\log\lambda^{3} I(2,3) + 15\log u^{4} I(2,2)$$
$$-6\log u^{5} I(2,1) + \log u^{6} I(2,0)\Big], \tag{B.19}$$

$$J(2,7) = \frac{1}{\lambda^2\gamma^7}\Big[I(2,7) - 7\log\lambda\, I(2,6) + 21\log\lambda^{2} I(2,5) - 35\log\lambda^{3} I(2,4) + 35\log u^{4} I(2,3)$$
$$-21\log u^{5} I(2,2) + 7\log u^{6} I(2,1) - \log u^{7} I(2,0)\Big], \tag{B.20}$$

$$J(2,8) = \frac{1}{\lambda^2\gamma^8}\Big[I(2,8) - 8\log\lambda\, I(2,7) + 28\log\lambda^{2} I(2,6) - 56\log\lambda^{3} I(2,5) + 70\log u^{4} I(2,4)$$
$$-56\log u^{5} I(2,3) + 28\log u^{6} I(2,2) - 8\log u^{7} I(2,1) + \log u^{8} I(2,0)\Big], \tag{B.21}$$

$$J(3,0) = \frac{1}{\lambda^3} I(3,0), \tag{B.22}$$

$$J(3,1) = \frac{1}{\lambda^3\gamma}\, I(3,1) - \log\lambda\, I(3,0)\ , \tag{B.23}$$

$$J(3,2) = \frac{1}{\lambda^3\gamma^2}\Big[I(3,2) - 2\log\lambda\, I(3,1) + \log\lambda^{2} I(3,0)\Big], \tag{B.24}$$

$$J(3,3) = \frac{1}{\lambda^3\gamma^3}\Big[I(3,3) - 3\log\lambda\, I(3,2) + 3\log\lambda^{2} I(3,1) - \log\lambda^{3} I(3,0)\Big], \tag{B.25}$$

$$J(3,4) = \frac{1}{\lambda^3\gamma^4}\Big[I(3,4) - 4\log\lambda\, I(3,3) + 6\log\lambda^{2} I(3,2) - 4\log\lambda^{3} I(3,1) + \log\lambda^{4} I(3,0)\Big], \tag{B.26}$$

$$J(3,5) = \frac{1}{\lambda^3\gamma^5}\Big[I(3,5) - 5\log\lambda\, I(3,4) + 10\log\lambda^{2} I(3,3) - 10\log\lambda^{3} I(3,2) + 5\log u^{4} I(3,1)$$
$$- \log u^{5} I(3,0)\Big], \tag{B.27}$$

$$J(3,6) = \frac{1}{\lambda^3\gamma^6}\Big[I(3,6) - 6\log\lambda\, I(3,5) + 15\log\lambda^{2} I(3,4) - 20\log\lambda^{3} I(3,3) + 15\log u^{4} I(3,2)$$
$$-6\log u^{5} I(3,1) + \log u^{6} I(3,0)\Big], \tag{B.28}$$

$$J(3,7) = \frac{1}{\lambda^3\gamma^7}\Big[I(3,7) - 7\log\lambda\, I(3,6) + 21\log\lambda^{2} I(3,5) - 35\log\lambda^{3} I(3,4) + 35\log u^{4} I(3,3)$$
$$-21\log u^{5} I(3,2) + 7\log u^{6} I(3,1) - \log u^{7} I(3,0)\Big], \tag{B.29}$$

$$J(3,8) = \frac{1}{\lambda^3\gamma^8}\Big[I(3,8) - 8\log\lambda\, I(3,7) + 28\log\lambda^{2} I(3,6) - 56\log\lambda^{3} I(3,5) + 70\log u^{4} I(3,4)$$
$$-56\log u^{5} I(3,3) + 28\log u^{6} I(3,2) - 8\log u^{7} I(3,1) + \log u^{8} I(3,0)\Big], \tag{B.30}$$

$$J(3,9) = \frac{1}{\lambda^3\gamma^9}\Big[I(3,9) - 9\log\lambda\, I(3,8) + 36\log\lambda^{2} I(3,7) - 84\log\lambda^{3} I(3,6) + 126\log u^{4} I(3,5)$$
$$-126\log u^{5} I(3,4) + 84\log u^{6} I(3,3) - 36\log u^{7} I(3,2) + 9\log u^{8} I(3,1)$$
$$- \log u^{9} I(3,0)\Big], \tag{B.31}$$

$$J(3,10) = \frac{1}{\lambda^3\gamma^{10}}\Big[I(3,10) - 10\log\lambda\, I(3,9) + 45\log\lambda^{2} I(3,8) - 120\log\lambda^{3} I(3,7) + 210\log u^{4} I(3,6)$$
$$-252\log u^{5} I(3,5) + 210\log u^{6} I(3,4) - 120\log u^{7} I(3,3) + 45\log u^{8} I(3,2)$$
$$-10\log u^{9} I(3,1) + \log u^{10} I(3,0)\Big], \tag{B.32}$$

$$J\ 4,0\ = \frac{1}{\lambda^4} I(4,0)\,, \tag{B.33}$$

$$J\ 4,1\ = \frac{1}{\lambda^4 \gamma}\ I(4,1) - \log\lambda\, I(4,0)\ \,, \tag{B.34}$$

$$J\ 4,2\ = \frac{1}{\lambda^4 \gamma^2}\Big[I(4,2) - 2\log\lambda\, I(4,1) + \log\lambda^{\ 2} I(4,0) \Big], \tag{B.35}$$

$$J\ 4,3\ = \frac{1}{\lambda^4 \gamma^3}\Big[I(4,3) - 3\log\lambda\, I(4,2) + 3\ \log\lambda^{\ 2} I(4,1) - \log\lambda^{\ 3} I(4,0) \Big], \tag{B.36}$$

$$J\ 4,4\ = \frac{1}{\lambda^4 \gamma^4}\Big[I(4,4) - 4\log\lambda\, I(4,3) + 6\ \log\lambda^{\ 2} I(4,2) - 4\ \log\lambda^{\ 3} I(4,1) + \log\lambda^{\ 4} I(4,0) \Big], \tag{B.37}$$

$$\begin{aligned} J\ 4,5\ = \frac{1}{\lambda^4 \gamma^5}\Big[& I(4,5) - 5\log\lambda\, I(4,4) + 10\ \log\lambda^{\ 2} I(4,3) - 10\ \log\lambda^{\ 3} I(4,2) + 5\ \log u^{\ 4} I(4,1) \\ & - \log u^{\ 5} I(4,0) \Big], \end{aligned} \tag{B.38}$$

$$\begin{aligned} J\ 4,6\ = \frac{1}{\lambda^4 \gamma^6}\Big[& I(4,6) - 6\log\lambda\, I(4,5) + 15\ \log\lambda^{\ 2} I(4,4) - 20\ \log\lambda^{\ 3} I(4,3) + 15\ \log u^{\ 4} I(4,2) \\ & - 6\ \log u^{\ 5} I(4,1) + \log u^{\ 6} I(4,0) \Big], \end{aligned} \tag{B.39}$$

$$\begin{aligned} J\ 4,7\ = \frac{1}{\lambda^4 \gamma^7}\Big[& I(4,7) - 7\log\lambda\, I(4,6) + 21\ \log\lambda^{\ 2} I(4,5) - 35\ \log\lambda^{\ 3} I(4,4) + 35\ \log u^{\ 4} I(4,3) \\ & - 21\ \log u^{\ 5} I(4,2) + 7\ \log u^{\ 6} I(4,1) - \log u^{\ 7} I(4,0) \Big], \end{aligned} \tag{B.40}$$

$$\begin{aligned} J\ 4,8\ = \frac{1}{\lambda^4 \gamma^8}\Big[& I(4,8) - 8\log\lambda\, I(4,7) + 28\ \log\lambda^{\ 2} I(4,6) - 56\ \log\lambda^{\ 3} I(4,5) + 70\ \log u^{\ 4} I(4,4) \\ & - 56\ \log u^{\ 5} I(4,3) + 28\ \log u^{\ 6} I(4,2) - 8\ \log u^{\ 7} I(4,1) + \log u^{\ 8} I(4,0) \Big], \end{aligned} \tag{B.41}$$

$$\begin{aligned} J\ 4,9\ = \frac{1}{\lambda^4 \gamma^9}\Big[& I(4,9) - 9\log\lambda\, I(4,8) + 36\ \log\lambda^{\ 2} I(4,7) - 84\ \log\lambda^{\ 3} I(4,6) + 126\ \log u^{\ 4} I(4,5) \\ & - 126\ \log u^{\ 5} I(4,4) + 84\ \log u^{\ 6} I(4,3) - 36\ \log u^{\ 7} I(4,2) + 9\ \log u^{\ 8} I(4,1) \\ & - \log u^{\ 9} I(4,0) \Big], \end{aligned} \tag{B.42}$$

$$\begin{aligned} J\ 4,10\ = \frac{1}{\lambda^4 \gamma^{10}}\Big[& I(4,10) - 10\log\lambda\, I(4,9) + 45\ \log\lambda^{\ 2} I(4,8) - 120\ \log\lambda^{\ 3} I(4,7) + 210\ \log u^{\ 4} I(4,6) \\ & - 252\ \log u^{\ 5} I(4,5) + 210\ \log u^{\ 6} I(4,4) - 120\ \log u^{\ 7} I(4,3) + 45\ \log u^{\ 8} I(4,2) \\ & - 10\ \log u^{\ 9} I(4,1) + \log u^{\ 10} I(4,0) \Big], \end{aligned} \tag{B.43}$$

$$\begin{aligned} J\ 4,11\ = \frac{1}{\lambda^4 \gamma^{11}}\Big[& I(4,11) - 11\log\lambda\, I(4,10) + 55\ \log\lambda^{\ 2} I(4,9) - 165\ \log\lambda^{\ 3} I(4,8) \\ & + 330\ \log u^{\ 4} I(4,7) - 462\ \log u^{\ 5} I(4,6) + 462\ \log u^{\ 6} I(4,5) - 330\ \log u^{\ 7} I(4,4) \\ & + 165\ \log u^{\ 8} I(4,3) - 55\ \log u^{\ 9} I(4,2) + 11\ \log u^{\ 10} I(4,1) - \log u^{\ 11} I(4,0) \Big], \end{aligned} \tag{B.44}$$

$$\begin{aligned} J\ 4,12\ = \frac{1}{\lambda^4 \gamma^{12}}\Big[& I(4,12) - 12\log\lambda\, I(4,11) + 66\ \log\lambda^{\ 2} I(4,10) - 220\ \log\lambda^{\ 3} I(4,9) \\ & + 495\ \log u^{\ 4} I(4,8) - 792\ \log u^{\ 5} I(4,7) + 924\ \log u^{\ 6} I(4,6) - 792\ \log u^{\ 7} I(4,5) \\ & + 495\ \log u^{\ 8} I(4,4) - 220\ \log u^{\ 9} I(4,3) + 66\ \log u^{\ 10} I(4,2) - 12\ \log u^{\ 11} I(4,1) \\ & + \log u^{\ 12} I(4,0) \Big], \end{aligned} \tag{B.45}$$

$$E\ w_0^{\ 2}\ \ = n\,J(0,2) + n(n-1)\,J(0,1)\,J(0,1)\,, \tag{B.46}$$

$$E\ w_0 w_1\ = n\,J(1,1) + n(n-1)\,J(0,1)\,J(1,0)\,, \tag{B.47}$$

$$E\ w_0 w_2 = n J(1,2) + n(n-1) J(0,1) J(1,1), \tag{B.48}$$

$$E\ w_0 w_3 = n J(1,3) + n(n-1) J(0,1) J(1,2), \tag{B.49}$$

$$E\ w_0 w_4 = n J(1,4) + n(n-1) J(0,1) J(1,3), \tag{B.50}$$

$$E\ w_1^2 = n J(2,0) + n(n-1) J(1,0) J(1,0), \tag{B.51}$$

$$E\ w_1 w_2 = n J(2,1) + n(n-1) J(1,0) J(1,1), \tag{B.52}$$

$$E\ w_1 w_3 = n J(2,2) + n(n-1) J(1,0) J(1,2), \tag{B.53}$$

$$E\ w_1 w_4 = n J(2,3) + n(n-1) J(1,0) J(1,3), \tag{B.54}$$

$$E\ w_2^2 = n J(2,2) + n(n-1) J(1,1) J(1,1), \tag{B.55}$$

$$E\ w_2 w_3 = n J(2,3) + n(n-1) J(1,1) J(1,2), \tag{B.56}$$

$$E\ w_2 w_4 = n J(2,4) + n(n-1) J(1,1) J(1,3), \tag{B.57}$$

$$E\ w_3^2 = n J(2,4) + n(n-1) J(1,2) J(1,2), \tag{B.58}$$

$$E\ w_3 w_4 = n J(2,5) + n(n-1) J(1,2) J(1,3), \tag{B.59}$$

$$E\ w_4^2 = n J(2,6) + n(n-1) J(1,3) J(1,3), \tag{B.60}$$

$$E\ w_0^3 = n J(0,3) + 3n(n-1) J(0,2) J(0,1) + n(n-1)(n-2) J(0,1) J(0,1) J(0,1), \tag{B.61}$$

$$\begin{aligned} E\ w_0^2 w_1 &= n J(1,2) + 2n(n-1) J(1,1) J(0,1) + n(n-1) J(0,2) J(1,0) \\ &\quad + n(n-1)(n-2) J(0,1) J(0,1) J(1,0), \end{aligned} \tag{B.62}$$

$$\begin{aligned} E\ w_0^2 w_2 &= n J(1,3) + 2n(n-1) J(1,2) J(0,1) + n(n-1) J(0,2) J(1,1) \\ &\quad + n(n-1)(n-2) J(0,1) J(0,1) J(1,1), \end{aligned} \tag{B.63}$$

$$\begin{aligned} E\ w_0^2 w_3 &= n J(1,4) + 2n(n-1) J(1,3) J(0,1) + n(n-1) J(0,2) J(1,2) \\ &\quad + n(n-1)(n-2) J(0,1) J(0,1) J(1,2), \end{aligned} \tag{B.64}$$

$$\begin{aligned} E\ w_0^2 w_4 &= n J(1,5) + 2n(n-1) J(1,4) J(0,1) + n(n-1) J(0,2) J(1,3) \\ &\quad + n(n-1)(n-2) J(0,1) J(0,1) J(1,3), \end{aligned} \tag{B.65}$$

$$\begin{aligned} E\ w_0 w_1^2 &= n J(2,1) + 2n(n-1) J(1,1) J(1,0) + n(n-1) J(2,0) J(0,1) \\ &\quad + n(n-1)(n-2) J(0,1) J(0,1) J(1,0), \end{aligned} \tag{B.66}$$

$$\begin{aligned} E\ w_0 w_1 w_2 &= n J(2,2) + n(n-1) J(1,1) J(1,1) + n(n-1) J(1,2) J(1,0) \\ &\quad + n(n-1) J(2,1) J(0,1) + n(n-1)(n-2) J(0,1) J(1,0) J(1,1), \end{aligned} \tag{B.67}$$

$$\begin{aligned} E\ w_0 w_1 w_3 &= n J(2,3) + n(n-1) J(1,1) J(1,2) + n(n-1) J(1,3) J(1,0) \\ &\quad + n(n-1) J(2,2) J(0,1) + n(n-1)(n-2) J(0,1) J(1,0) J(1,2), \end{aligned} \tag{B.68}$$

$$\begin{aligned} E\ w_0 w_1 w_4 &= n J(2,4) + n(n-1) J(1,1) J(1,3) + n(n-1) J(1,4) J(1,0) \\ &\quad + n(n-1) J(2,3) J(0,1) + n(n-1)(n-2) J(0,1) J(1,0) J(1,3), \end{aligned} \tag{B.69}$$

$$\begin{aligned} E\ w_0 w_2^2 &= n J(2,3) + 2n(n-1) J(1,2) J(1,1) + n(n-1) J(2,2) J(0,1) \\ &\quad + n(n-1)(n-2) J(0,1) J(1,1) J(1,1), \end{aligned} \tag{B.70}$$

$$\begin{aligned} E\ w_0 w_2 w_3 &= n J(2,4) + n(n-1) J(1,2) J(1,2) + n(n-1) J(1,3) J(1,1) \\ &\quad + n(n-1) J(2,3) J(0,1) + n(n-1)(n-2) J(0,1) J(1,1) J(1,2), \end{aligned} \tag{B.71}$$

$$\begin{aligned} E\ w_0 w_2 w_4 &= n J(2,5) + n(n-1) J(1,2) J(1,3) + n(n-1) J(1,4) J(1,1) \\ &\quad + n(n-1) J(2,4) J(0,1) + n(n-1)(n-2) J(0,1) J(1,1) J(1,3), \end{aligned} \tag{B.72}$$

$$\begin{aligned} E\ w_0 w_3^2 &= n J(2,5) + 2n(n-1) J(1,3) J(1,2) + n(n-1) J(2,4) J(0,1) \\ &\quad + n(n-1)(n-2) J(0,1) J(1,2) J(1,2), \end{aligned} \tag{B.73}$$

$$\begin{aligned} E\ w_0 w_3 w_4 &= n J(2,6) + n(n-1) J(1,3) J(1,3) + n(n-1) J(1,4) J(1,2) \\ &\quad + n(n-1) J(2,5) J(0,1) + n(n-1)(n-2) J(0,1) J(1,2) J(1,3), \end{aligned} \tag{B.74}$$

$$E\ w_0 w_4^2 = n J(2,7) + 2n(n-1) J(1,4) J(1,3) + n(n-1) J(2,6) J(0,1)$$

$$+n(n-1)(n-2)\,J(0,1)\,J(1,3)\,J(1,3)\,, \tag{B.75}$$

$$E\ w_1^{\,3} = n\,J(3,0)+3n(n-1)\,J(2,0)\,J(1,0)+n(n-1)(n-2)\,J(1,0)\,J(1,0)\,J(1,0)\ , \tag{B.76}$$

$$E\ w_1^{\,2}w_2 = n\,J(3,1)+2n(n-1)\,J(2,1)\,J(1,0)+n(n-1)\,J(2,0)\,J(1,1)$$
$$+n(n-1)(n-2)\,J(1,0)\,J(1,0)\,J(1,1)\,, \tag{B.77}$$

$$E\ w_1^{\,2}w_3 = n\,J(3,2)+2n(n-1)\,J(2,2)\,J(1,0)+n(n-1)\,J(2,0)\,J(1,2)$$
$$+n(n-1)(n-2)\,J(1,0)\,J(1,0)\,J(1,2)\,, \tag{B.78}$$

$$E\ w_1^{\,2}w_4 = n\,J(3,3)+2n(n-1)\,J(2,3)\,J(1,0)+n(n-1)\,J(2,0)\,J(1,3)$$
$$+n(n-1)(n-2)\,J(1,0)\,J(1,0)\,J(1,3)\,, \tag{B.79}$$

$$E\ w_1 w_2^{\,2} = n\,J(3,2)+2n(n-1)\,J(2,1)\,J(1,1)+n(n-1)\,J(2,2)\,J(1,0)$$
$$+n(n-1)(n-2)\,J(1,0)\,J(1,1)\,J(1,1)\,, \tag{B.80}$$

$$E\ w_1w_2w_3 = n\,J(3,3)+n(n-1)\,J(2,1)\,J(1,2)+n(n-1)\,J(2,2)\,J(1,1)$$
$$+n(n-1)\,J(2,3)\,J(1,0)+n(n-1)(n-2)\,J(1,0)\,J(1,1)\,J(1,2)\,, \tag{B.81}$$

$$E\ w_1w_2w_4 = n\,J(3,4)+n(n-1)\,J(2,1)\,J(1,3)+n(n-1)\,J(2,3)\,J(1,1)$$
$$+n(n-1)\,J(2,4)\,J(1,0)+n(n-1)(n-2)\,J(1,0)\,J(1,1)\,J(1,3)\,, \tag{B.82}$$

$$E\ w_1 w_3^{\,2} = n\,J(3,4)+2n(n-1)\,J(2,2)\,J(1,2)+n(n-1)\,J(2,4)\,J(1,0)$$
$$+n(n-1)(n-2)\,J(1,0)\,J(1,2)\,J(1,2)\,, \tag{B.83}$$

$$E\ w_1w_3w_4 = n\,J(3,5)+n(n-1)\,J(2,2)\,J(1,3)+n(n-1)\,J(2,3)\,J(1,2)$$
$$+n(n-1)\,J(2,5)\,J(1,0)+n(n-1)(n-2)\,J(1,0)\,J(1,2)\,J(1,3)\,, \tag{B.84}$$

$$E\ w_1 w_4^{\,2} = n\,J(3,6)+2n(n-1)\,J(2,3)\,J(1,3)+n(n-1)\,J(2,6)\,J(1,0)$$
$$+n(n-1)(n-2)\,J(1,0)\,J(1,3)\,J(1,3)\,, \tag{B.85}$$

$$E\ w_2^{\,3} = n\,J(3,3)+3n(n-1)\,J(2,2)\,J(1,1)+n(n-1)(n-2)\,J(1,1)\,J(1,1)\,J(1,1)\ , \tag{B.86}$$

$$E\ w_2^{\,2}w_3 = n\,J(3,4)+2n(n-1)\,J(2,3)\,J(1,1)+n(n-1)\,J(2,2)\,J(1,2)$$
$$+n(n-1)(n-2)\,J(1,1)\,J(1,1)\,J(1,2)\,, \tag{B.87}$$

$$E\ w_2^{\,2}w_4 = n\,J(3,5)+2n(n-1)\,J(2,4)\,J(1,1)+n(n-1)\,J(2,2)\,J(1,3)$$
$$+n(n-1)(n-2)\,J(1,1)\,J(1,1)\,J(1,3)\,, \tag{B.88}$$

$$E\ w_2 w_3^{\,2} = n\,J(3,5)+2n(n-1)\,J(2,3)\,J(1,2)+n(n-1)\,J(2,4)\,J(1,1)$$
$$+n(n-1)(n-2)\,J(1,1)\,J(1,2)\,J(1,2)\,, \tag{B.89}$$

$$E\ w_2w_3w_4 = n\,J(3,6)+n(n-1)\,J(2,3)\,J(1,3)+n(n-1)\,J(2,4)\,J(1,2)$$
$$+n(n-1)\,J(2,5)\,J(1,1)+n(n-1)(n-2)\,J(1,1)\,J(1,2)\,J(1,3)\,, \tag{B.90}$$

$$E\ w_2 w_4^{\,2} = n\,J(3,7)+2n(n-1)\,J(2,4)\,J(1,3)+n(n-1)\,J(2,6)\,J(1,1)$$
$$+n(n-1)(n-2)\,J(1,1)\,J(1,3)\,J(1,3)\,, \tag{B.91}$$

$$E\ w_3^{\,3} = n\,J(3,6)+3n(n-1)\,J(2,4)\,J(1,2)+n(n-1)(n-2)\,J(1,2)\,J(1,2)\,J(1,2)\ , \tag{B.92}$$

$$E\ w_3^{\,2}w_4 = n\,J(3,7)+2n(n-1)\,J(2,5)\,J(1,2)+n(n-1)\,J(2,4)\,J(1,3)$$
$$+n(n-1)(n-2)\,J(1,2)\,J(1,2)\,J(1,3)\,, \tag{B.93}$$

$$E\ w_3 w_4^{\,2} = n\,J(3,8)+2n(n-1)\,J(2,5)\,J(1,3)+n(n-1)\,J(2,6)\,J(1,2)$$
$$+n(n-1)(n-2)\,J(1,2)\,J(1,3)\,J(1,3)\,, \tag{B.94}$$

$$E\ w_4^{\,3} = n\,J(3,9)+3n(n-1)\,J(2,6)\,J(1,3)+n(n-1)(n-2)\,J(1,3)\,J(1,3)\,J(1,3)\ , \tag{B.95}$$

$$E\ w_0^{\,4} = n\,J(0,4)+4n(n-1)\,J(0,1)\,J(0,3)+3n(n-1)J(0,2)\,J(0,2)$$
$$+6n(n-1)(n-2)\,J(0,1)\,J(0,1)\,J(0,2)+n(n-1)(n-2)(n-3)\,J(0,1)\,J(0,1)\,J(0,1)\,J(0,1)\,, \tag{B.96}$$

$$E\ w_0^3 w_1 = nJ(1,3)+n(n-1)J(1,0)J(0,3)+3n(n-1)J(0,1)J(1,2)+3n(n-1)J(0,2)J(1,1)$$
$$+3n(n-1)(n-2)J(0,1)J(0,1)J(1,1)+3n(n-1)(n-2)J(0,1)J(1,0)J(0,2)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(0,1)J(0,1)J(1,0), \quad \text{(B.97)}$$

$$E\ w_0^3 w_2 = nJ(1,4)+n(n-1)J(1,1)J(0,3)+3n(n-1)J(0,1)J(1,3)+3n(n-1)J(0,2)J(1,2)$$
$$+3n(n-1)(n-2)J(0,1)J(0,1)J(1,2)+3n(n-1)(n-2)J(0,1)J(1,1)J(0,2)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(0,1)J(0,1)J(1,1), \quad \text{(B.98)}$$

$$E\ w_0^3 w_3 = nJ(1,5)+n(n-1)J(1,2)J(0,3)+3n(n-1)J(0,1)J(1,4)+3n(n-1)J(0,2)J(1,3)$$
$$+3n(n-1)(n-2)J(0,1)J(0,1)J(1,3)+3n(n-1)(n-2)J(0,1)J(1,2)J(0,2)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(0,1)J(0,1)J(1,2), \quad \text{(B.99)}$$

$$E\ w_0^3 w_4 = nJ(1,6)+n(n-1)J(1,3)J(0,3)+3n(n-1)J(0,1)J(1,5)+3n(n-1)J(0,2)J(1,4)$$
$$+3n(n-1)(n-2)J(0,1)J(0,1)J(1,4)+3n(n-1)(n-2)J(0,1)J(1,3)J(0,2)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(0,1)J(0,1)J(1,3), \quad \text{(B.100)}$$

$$E\ w_0^2 w_1^2 = nJ(2,2)+2n(n-1)J(0,1)J(2,1)+2n(n-1)J(1,0)J(1,2)+n(n-1)J(0,2)J(2,0)$$
$$+2n(n-1)J(1,1)J(1,1)+n(n-1)(n-2)J(0,1)J(0,1)J(2,0)$$
$$+4n(n-1)(n-2)J(0,1)J(1,0)J(1,1)+n(n-1)(n-2)J(0,2)J(1,0)J(1,0)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(0,1)J(1,0)J(1,0), \quad \text{(B.101)}$$

$$E\ w_0^2 w_1 w_2 = nJ(2,3)+n(n-1)J(1,0)J(1,3)+n(n-1)J(1,1)J(1,2)+2n(n-1)J(0,1)J(2,2)$$
$$+n(n-1)J(0,2)J(2,1)+2n(n-1)J(1,1)J(1,2)+n(n-1)(n-2)J(0,1)J(0,1)J(2,1)$$
$$+2n(n-1)(n-2)J(0,1)J(1,0)J(1,2)+2n(n-1)(n-2)J(0,1)J(1,1)J(1,1)$$
$$+n(n-1)(n-2)J(0,2)J(1,0)J(1,1)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(0,1)J(1,0)J(1,1), \quad \text{(B.102)}$$

$$E\ w_0^2 w_1 w_3 = nJ(2,4)+n(n-1)J(1,0)J(1,4)+n(n-1)J(1,2)J(1,2)+2n(n-1)J(0,1)J(2,3)$$
$$+n(n-1)J(0,2)J(2,2)+2n(n-1)J(1,1)J(1,3)+n(n-1)(n-2)J(0,1)J(0,1)J(2,2)$$
$$+2n(n-1)(n-2)J(0,1)J(1,0)J(1,3)+2n(n-1)(n-2)J(0,1)J(1,1)J(1,2)$$
$$+n(n-1)(n-2)J(0,2)J(1,0)J(1,2)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(0,1)J(1,0)J(1,2), \quad \text{(B.103)}$$

$$E\ w_0^2 w_1 w_4 = nJ(2,5)+n(n-1)J(1,0)J(1,5)+n(n-1)J(1,2)J(1,3)+2n(n-1)J(0,1)J(2,5)$$
$$+n(n-1)J(0,2)J(2,3)+2n(n-1)J(1,1)J(1,4)+n(n-1)(n-2)J(0,1)J(0,1)J(2,3)$$
$$+2n(n-1)(n-2)J(0,1)J(1,0)J(1,4)+2n(n-1)(n-2)J(0,1)J(1,1)J(1,3)$$
$$+n(n-1)(n-2)J(0,2)J(1,0)J(1,3)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(0,1)J(1,0)J(1,3), \quad \text{(B.104)}$$

$$E\ w_0^2 w_2^2 = nJ(2,4)+2n(n-1)J(0,1)J(2,3)+2n(n-1)J(1,1)J(1,3)+n(n-1)J(0,2)J(2,2)$$
$$+2n(n-1)J(1,2)J(1,2)+n(n-1)(n-2)J(0,1)J(0,1)J(2,2)$$
$$+4n(n-1)(n-2)J(0,1)J(1,1)J(1,2)+n(n-1)(n-2)J(0,2)J(1,1)J(1,1)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(0,1)J(1,1)J(1,1), \quad \text{(B.105)}$$

$$E\ w_0^2 w_2 w_3 = nJ(2,5)+n(n-1)J(1,1)J(1,4)+n(n-1)J(1,2)J(1,3)+2n(n-1)J(0,1)J(2,4)$$
$$+n(n-1)J(0,2)J(2,3)+2n(n-1)J(1,2)J(1,3)+n(n-1)(n-2)J(0,1)J(0,1)J(2,3)$$
$$+2n(n-1)(n-2)J(0,1)J(1,1)J(1,3)+2n(n-1)(n-2)J(0,1)J(1,2)J(1,2)$$
$$+n(n-1)(n-2)J(0,2)J(1,1)J(1,2)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(0,1)J(1,1)J(1,2), \quad \text{(B.106)}$$

$$E\ w_0^2 w_2 w_4 = nJ(2,6)+n(n-1)J(1,1)J(1,5)+n(n-1)J(1,3)J(1,3)+2n(n-1)J(0,1)J(2,5)$$
$$+n(n-1)J(0,2)J(2,4)+2n(n-1)J(1,2)J(1,4)+n(n-1)(n-2)J(0,1)J(0,1)J(2,4)$$
$$+2n(n-1)(n-2)J(0,1)J(1,1)J(1,4)+2n(n-1)(n-2)J(0,1)J(1,2)J(1,3)$$
$$+n(n-1)(n-2)J(0,2)J(1,1)J(1,3)$$

$$+n(n-1)(n-2)(n-3)J(0,1)J(0,1)J(1,1)J(1,3), \quad \text{(B.107)}$$

$$E\ w_0^2 w_3^2 = nJ(2,6)+2n(n-1)J(0,1)J(2,5)+2n(n-1)J(1,2)J(1,4)+n(n-1)J(0,2)J(2,4)$$
$$+2n(n-1)J(1,3)J(1,3)+n(n-1)(n-2)J(0,1)J(0,1)J(2,4)$$
$$+4n(n-1)(n-2)J(0,1)J(1,2)J(1,3)+n(n-1)(n-2)J(0,2)J(1,2)J(1,2)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(0,1)J(1,2)J(1,2), \quad \text{(B.108)}$$

$$E\ w_0^2 w_3 w_4 = nJ(2,7)+n(n-1)J(1,2)J(1,5)+n(n-1)J(1,3)J(1,4)+2n(n-1)J(0,1)J(2,6)$$
$$+n(n-1)J(0,2)J(2,5)+2n(n-1)J(1,3)J(1,4)+n(n-1)(n-2)J(0,1)J(0,1)J(2,5)$$
$$+2n(n-1)(n-2)J(0,1)J(1,2)J(1,4)+2n(n-1)(n-2)J(0,1)J(1,3)J(1,3)$$
$$+n(n-1)(n-2)J(0,2)J(1,2)J(1,3)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(0,1)J(1,2)J(1,3), \quad \text{(B.109)}$$

$$E\ w_0^2 w_4^2 = nJ(2,8)+2n(n-1)J(0,1)J(2,7)+2n(n-1)J(1,3)J(1,5)+n(n-1)J(0,2)J(2,6)$$
$$+2n(n-1)J(1,4)J(1,4)+n(n-1)(n-2)J(0,1)J(0,1)J(2,6)$$
$$+4n(n-1)(n-2)J(0,1)J(1,3)J(1,4)+n(n-1)(n-2)J(0,2)J(1,3)J(1,3)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(0,1)J(1,3)J(1,3), \quad \text{(B.110)}$$

$$E\ w_0 w_1^3 = nJ(3,1)+n(n-1)J(0,1)J(3,0)+3n(n-1)J(1,0)J(2,1)+3n(n-1)J(1,1)J(2,0)$$
$$+3n(n-1)(n-2)J(1,0)J(1,0)J(1,1)+3n(n-1)(n-2)J(1,0)J(0,1)J(2,0)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,0)J(1,0)J(1,0), \quad \text{(B.111)}$$

$$E\ w_0 w_1^2 w_2 = nJ(3,2)+n(n-1)J(0,1)J(3,1)+n(n-1)J(1,1)J(2,1)+2n(n-1)J(1,0)J(2,2)$$
$$+n(n-1)J(1,2)J(2,0)+2n(n-1)J(1,1)J(2,1)+n(n-1)(n-2)J(1,0)J(1,0)J(1,2)$$
$$+2n(n-1)(n-2)J(0,1)J(1,0)J(2,1)+2n(n-1)(n-2)J(1,0)J(1,1)J(1,1)$$
$$+n(n-1)(n-2)J(0,1)J(1,1)J(2,0)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,0)J(1,0)J(1,1), \quad \text{(B.112)}$$

$$E\ w_0 w_1^2 w_3 = nJ(3,3)+n(n-1)J(0,1)J(3,2)+n(n-1)J(1,2)J(2,1)+2n(n-1)J(1,0)J(2,3)$$
$$+n(n-1)J(1,3)J(2,0)+2n(n-1)J(1,1)J(2,2)+n(n-1)(n-2)J(1,0)J(1,0)J(1,3)$$
$$+2n(n-1)(n-2)J(0,1)J(1,0)J(2,2)+2n(n-1)(n-2)J(1,0)J(1,1)J(1,2)$$
$$+n(n-1)(n-2)J(0,1)J(1,2)J(2,0)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,0)J(1,0)J(1,2), \quad \text{(B.113)}$$

$$E\ w_0 w_1^2 w_4 = nJ(3,4)+n(n-1)J(0,1)J(3,3)+n(n-1)J(1,3)J(2,1)+2n(n-1)J(1,0)J(2,4)$$
$$+n(n-1)J(1,4)J(2,0)+2n(n-1)J(1,1)J(2,3)+n(n-1)(n-2)J(1,0)J(1,0)J(1,4)$$
$$+2n(n-1)(n-2)J(0,1)J(1,0)J(2,3)+2n(n-1)(n-2)J(1,0)J(1,1)J(1,3)$$
$$+n(n-1)(n-2)J(0,1)J(1,3)J(2,0)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,0)J(1,0)J(1,3), \quad \text{(B.114)}$$

$$E\ w_0 w_1 w_2^2 = nJ(3,3)+n(n-1)J(0,1)J(3,2)+n(n-1)J(1,0)J(2,3)+2n(n-1)J(1,1)J(2,2)$$
$$+n(n-1)J(1,1)J(2,2)+2n(n-1)J(1,2)J(2,1)+n(n-1)(n-2)J(1,1)J(1,1)J(1,1)$$
$$+2n(n-1)(n-2)J(0,1)J(1,1)J(2,1)+2n(n-1)(n-2)J(1,0)J(1,1)J(1,2)$$
$$+n(n-1)(n-2)J(0,1)J(1,0)J(2,2)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,0)J(1,1)J(1,1), \quad \text{(B.115)}$$

$$E\ w_0 w_1 w_2 w_3 = nJ(3,4)+n(n-1)J(0,1)J(3,3)+n(n-1)J(1,0)J(2,4)+n(n-1)J(1,1)J(2,3)$$
$$+n(n-1)J(1,2)J(2,2)+n(n-1)J(1,1)J(2,3)+n(n-1)J(1,2)J(2,2)$$
$$+n(n-1)J(1,3)J(2,1)+n(n-1)(n-2)J(0,1)J(1,0)J(2,3)$$
$$+n(n-1)(n-2)J(0,1)J(1,1)J(2,2)+n(n-1)(n-2)J(0,1)J(1,2)J(2,1)$$
$$+n(n-1)(n-2)J(1,0)J(1,1)J(1,3)+n(n-1)(n-2)J(1,0)J(1,2)J(1,2)$$
$$+n(n-1)(n-2)J(1,1)J(1,1)J(1,2)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,0)J(1,1)J(1,2), \quad \text{(B.116)}$$

$$E\ w_0w_1w_2w_4 = nJ(3,5)+n(n-1)J(0,1)J(3,4)+n(n-1)J(1,0)J(2,5)+n(n-1)J(1,1)J(2,4)$$
$$+n(n-1)J(1,3)J(2,2)+n(n-1)J(1,1)J(2,4)+n(n-1)J(1,2)J(2,3)$$
$$+n(n-1)J(1,4)J(2,1)+n(n-1)(n-2)J(0,1)J(1,0)J(2,4)$$
$$+n(n-1)(n-2)J(0,1)J(1,1)J(2,3)+n(n-1)(n-2)J(0,1)J(1,3)J(2,1)$$
$$+n(n-1)(n-2)J(1,0)J(1,1)J(1,4)+n(n-1)(n-2)J(1,0)J(1,2)J(1,3)$$
$$+n(n-1)(n-2)J(1,1)J(1,1)J(1,3)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,0)J(1,1)J(1,3), \quad \text{(B.117)}$$

$$E\ w_0w_1w_3^2 = nJ(3,5)+n(n-1)J(0,1)J(3,4)+n(n-1)J(1,0)J(2,5)+2n(n-1)J(1,2)J(2,3)$$
$$+n(n-1)J(1,1)J(2,4)+2n(n-1)J(1,3)J(2,2)+n(n-1)(n-2)J(1,1)J(1,2)J(1,2)$$
$$+2n(n-1)(n-2)J(0,1)J(1,2)J(2,2)+2n(n-1)(n-2)J(1,0)J(1,2)J(1,3)$$
$$+n(n-1)(n-2)J(0,1)J(1,0)J(2,4)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,0)J(1,2)J(1,2), \quad \text{(B.118)}$$

$$E\ w_0w_1w_3w_4 = nJ(3,6)+n(n-1)J(0,1)J(3,5)+n(n-1)J(1,0)J(2,6)+n(n-1)J(1,2)J(2,4)$$
$$+n(n-1)J(1,3)J(2,3)+n(n-1)J(1,1)J(2,5)+n(n-1)J(1,3)J(2,3)$$
$$+n(n-1)J(1,4)J(2,2)+n(n-1)(n-2)J(0,1)J(1,0)J(2,5)$$
$$+n(n-1)(n-2)J(0,1)J(1,2)J(2,3)+n(n-1)(n-2)J(0,1)J(1,3)J(2,2)$$
$$+n(n-1)(n-2)J(1,0)J(1,2)J(1,4)+n(n-1)(n-2)J(1,0)J(1,3)J(1,3)$$
$$+n(n-1)(n-2)J(1,1)J(1,2)J(1,3)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,0)J(1,2)J(1,3), \quad \text{(B.119)}$$

$$E\ w_0w_1w_4^2 = nJ(3,7)+n(n-1)J(0,1)J(3,6)+n(n-1)J(1,0)J(2,7)+2n(n-1)J(1,3)J(2,4)$$
$$+n(n-1)J(1,1)J(2,6)+2n(n-1)J(1,4)J(2,3)+n(n-1)(n-2)J(1,1)J(1,3)J(1,3)$$
$$+2n(n-1)(n-2)J(0,1)J(1,3)J(2,3)+2n(n-1)(n-2)J(1,0)J(1,3)J(1,4)$$
$$+n(n-1)(n-2)J(0,1)J(1,0)J(2,6)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,0)J(1,3)J(1,3), \quad \text{(B.120)}$$

$$E\ w_0w_2^3 = nJ(3,4)+n(n-1)J(0,1)J(3,3)+3n(n-1)J(1,1)J(2,3)+3n(n-1)J(2,2)J(1,2)$$
$$+3n(n-1)(n-2)J(1,1)J(1,1)J(1,2)+3n(n-1)(n-2)J(1,1)J(0,1)J(2,2)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,1)J(1,1)J(1,1), \quad \text{(B.121)}$$

$$E\ w_0w_2^2w_3 = nJ(3,5)+n(n-1)J(0,1)J(3,4)+n(n-1)J(1,2)J(2,3)+2n(n-1)J(1,1)J(2,4)$$
$$+n(n-1)J(1,3)J(2,2)+2n(n-1)J(1,2)J(2,3)+n(n-1)(n-2)J(1,1)J(1,1)J(1,3)$$
$$+2n(n-1)(n-2)J(0,1)J(1,1)J(2,3)+2n(n-1)(n-2)J(1,1)J(1,2)J(1,2)$$
$$+n(n-1)(n-2)J(0,1)J(1,2)J(2,2)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,1)J(1,1)J(1,2), \quad \text{(B.122)}$$

$$E\ w_0w_2^2w_4 = nJ(3,6)+n(n-1)J(0,1)J(3,5)+n(n-1)J(1,3)J(2,3)+2n(n-1)J(1,1)J(2,5)$$
$$+n(n-1)J(1,4)J(2,2)+2n(n-1)J(1,2)J(2,4)+n(n-1)(n-2)J(1,1)J(1,1)J(1,4)$$
$$+2n(n-1)(n-2)J(0,1)J(1,1)J(2,4)+2n(n-1)(n-2)J(1,1)J(1,2)J(1,3)$$
$$+n(n-1)(n-2)J(0,1)J(1,3)J(2,2)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,1)J(1,1)J(1,3), \quad \text{(B.123)}$$

$$E\ w_0w_2w_3^2 = nJ(3,6)+n(n-1)J(0,1)J(3,5)+n(n-1)J(1,1)J(2,5)+2n(n-1)J(1,2)J(2,4)$$
$$+n(n-1)J(1,2)J(2,4)+2n(n-1)J(1,3)J(2,3)+n(n-1)(n-2)J(1,2)J(1,2)J(1,2)$$
$$+2n(n-1)(n-2)J(0,1)J(1,2)J(2,3)+2n(n-1)(n-2)J(1,1)J(1,2)J(1,3)$$
$$+n(n-1)(n-2)J(0,1)J(1,1)J(2,4)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,1)J(1,2)J(1,2), \quad \text{(B.124)}$$

$$E\ w_0w_2w_3w_4 = nJ(3,7)+n(n-1)J(0,1)J(3,6)+n(n-1)J(1,1)J(2,6)+n(n-1)J(1,2)J(2,5)$$
$$+n(n-1)J(1,3)J(2,4)+n(n-1)J(1,2)J(2,5)+n(n-1)J(1,3)J(2,4)$$
$$+n(n-1)J(1,4)J(2,3)+n(n-1)(n-2)J(0,1)J(1,1)J(2,5)$$
$$+n(n-1)(n-2)J(0,1)J(1,2)J(2,4)+n(n-1)(n-2)J(0,1)J(1,3)J(2,3)$$
$$+n(n-1)(n-2)J(1,1)J(1,2)J(1,4)+n(n-1)(n-2)J(1,1)J(1,3)J(1,3)$$
$$+n(n-1)(n-2)J(1,2)J(1,2)J(1,3)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,1)J(1,2)J(1,3), \quad \text{(B.125)}$$

$$E\ w_0w_2w_4^2 = nJ(3,8)+n(n-1)J(0,1)J(3,7)+n(n-1)J(1,1)J(2,7)+2n(n-1)J(1,3)J(2,5)$$
$$+n(n-1)J(1,2)J(2,6)+2n(n-1)J(1,4)J(2,4)+n(n-1)(n-2)J(1,2)J(1,3)J(1,3)$$
$$+2n(n-1)(n-2)J(0,1)J(1,3)J(2,4)+2n(n-1)(n-2)J(1,1)J(1,3)J(1,4)$$
$$+n(n-1)(n-2)J(0,1)J(1,1)J(2,6)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,1)J(1,3)J(1,3), \quad \text{(B.126)}$$

$$E\ w_0w_3^3 = nJ(3,7)+n(n-1)J(0,1)J(3,6)+3n(n-1)J(1,2)J(2,5)+3n(n-1)J(1,3)J(2,4)$$
$$+3n(n-1)(n-2)J(1,2)J(1,2)J(1,3)+3n(n-1)(n-2)J(1,2)J(0,1)J(2,4)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,2)J(1,2)J(1,2), \quad \text{(B.127)}$$

$$E\ w_0w_3^2w_4 = nJ(3,8)+n(n-1)J(0,1)J(3,7)+n(n-1)J(1,3)J(2,5)+2n(n-1)J(1,2)J(2,6)$$
$$+n(n-1)J(1,4)J(2,4)+2n(n-1)J(1,3)J(2,5)+n(n-1)(n-2)J(1,2)J(1,2)J(1,4)$$
$$+2n(n-1)(n-2)J(0,1)J(1,2)J(2,5)+2n(n-1)(n-2)J(1,2)J(1,3)J(1,3)$$
$$+n(n-1)(n-2)J(0,1)J(1,3)J(2,4)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,2)J(1,2)J(1,3), \quad \text{(B.128)}$$

$$E\ w_0w_3w_4^2 = nJ(3,9)+n(n-1)J(0,1)J(3,8)+n(n-1)J(1,2)J(2,7)+2n(n-1)J(1,3)J(2,6)$$
$$+n(n-1)J(1,3)J(2,6)+2n(n-1)J(1,4)J(2,5)+n(n-1)(n-2)J(1,3)J(1,3)J(1,3)$$
$$+2n(n-1)(n-2)J(0,1)J(1,3)J(2,5)+2n(n-1)(n-2)J(1,2)J(1,3)J(1,4)$$
$$+n(n-1)(n-2)J(0,1)J(1,2)J(2,6)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,2)J(1,3)J(1,3), \quad \text{(B.129)}$$

$$E\ w_0w_4^3 = nJ(3,10)+n(n-1)J(0,1)J(3,9)+3n(n-1)J(1,3)J(2,7)+3n(n-1)J(1,4)J(2,6)$$
$$+3n(n-1)(n-2)J(1,3)J(1,3)J(1,4)+3n(n-1)(n-2)J(1,3)J(0,1)J(2,6)$$
$$+n(n-1)(n-2)(n-3)J(0,1)J(1,3)J(1,3)J(1,3), \quad \text{(B.130)}$$

$$E\ w_1^4 = nJ(4,0)+4n(n-1)J(3,0)J(1,0)+3n(n-1)J(2,0)J(2,0)$$
$$+6n(n-1)(n-2)J(1,0)J(1,0)J(2,0)+n(n-1)(n-2)(n-3)J(1,0)J(1,0)J(1,0)J(1,0), \quad \text{(B.131)}$$

$$E\ w_1^3w_2 = nJ(4,1)+n(n-1)J(1,1)J(3,0)+3n(n-1)J(1,0)J(3,1)+3n(n-1)J(2,0)J(2,1)$$
$$+3n(n-1)(n-2)J(1,0)J(1,0)J(2,1)+3n(n-1)(n-2)J(1,0)J(1,1)J(2,0)$$
$$+n(n-1)(n-2)(n-3)J(1,0)J(1,0)J(1,0)J(1,1), \quad \text{(B.132)}$$

$$E\ w_1^3w_3 = nJ(4,2)+n(n-1)J(1,2)J(3,0)+3n(n-1)J(1,0)J(3,2)+3n(n-1)J(2,0)J(2,2)$$
$$+3n(n-1)(n-2)J(1,0)J(1,0)J(2,2)+3n(n-1)(n-2)J(1,0)J(1,2)J(2,0)$$
$$+n(n-1)(n-2)(n-3)J(1,0)J(1,0)J(1,0)J(1,2), \quad \text{(B.133)}$$

$$E\ w_1^3w_4 = nJ(4,3)+n(n-1)J(1,3)J(3,0)+3n(n-1)J(1,0)J(3,3)+3n(n-1)J(2,0)J(2,3)$$
$$+3n(n-1)(n-2)J(1,0)J(1,0)J(2,3)+3n(n-1)(n-2)J(1,0)J(1,3)J(2,0)$$
$$+n(n-1)(n-2)(n-3)J(1,0)J(1,0)J(1,0)J(1,3), \quad \text{(B.134)}$$

$$E\ w_1^2w_2^2 = nJ(4,2)+2n(n-1)J(1,0)J(3,2)+2n(n-1)J(1,1)J(3,1)+n(n-1)J(2,0)J(2,2)$$
$$+2n(n-1)J(2,1)J(2,1)+n(n-1)(n-2)J(1,0)J(1,0)J(2,2)$$
$$+4n(n-1)(n-2)J(1,0)J(1,1)J(2,1)+n(n-1)(n-2)J(1,1)J(1,1)J(2,0)$$
$$+n(n-1)(n-2)(n-3)J(1,0)J(1,0)J(1,1)J(1,1), \quad \text{(B.135)}$$

$$E\ w_1^2 w_2 w_3 = n\,J(4,3) + n(n-1)\,J(1,1)\,J(3,2) + n(n-1)\,J(1,2)\,J(3,1) + 2n(n-1)\,J(1,0)\,J(3,3)$$
$$+n(n-1)\,J(2,0)\,J(2,3) + 2n(n-1)\,J(2,1)\,J(2,2) + n(n-1)(n-2)\,J(1,0)\,J(1,0)\,J(2,3)$$
$$+2n(n-1)(n-2)\,J(1,0)\,J(1,1)\,J(2,2) + 2n(n-1)(n-2)\,J(1,0)\,J(1,2)\,J(2,1)$$
$$+n(n-1)(n-2)\,J(1,1)\,J(1,2)\,J(2,0)$$
$$+n(n-1)(n-2)(n-3)\,J(1,0)\,J(1,0)\,J(1,1)\,J(1,2)\,, \qquad \text{(B.136)}$$

$$E\ w_1^2 w_2 w_4 = n\,J(4,4) + n(n-1)\,J(1,1)\,J(3,3) + n(n-1)\,J(1,3)\,J(3,1) + 2n(n-1)\,J(1,0)\,J(3,4)$$
$$+n(n-1)\,J(2,0)\,J(2,4) + 2n(n-1)\,J(2,1)\,J(2,3) + n(n-1)(n-2)\,J(1,0)\,J(1,0)\,J(2,4)$$
$$+2n(n-1)(n-2)\,J(1,0)\,J(1,1)\,J(2,3) + 2n(n-1)(n-2)\,J(1,0)\,J(1,3)\,J(2,1)$$
$$+n(n-1)(n-2)\,J(1,1)\,J(1,3)\,J(2,0)$$
$$+n(n-1)(n-2)(n-3)\,J(1,0)\,J(1,0)\,J(1,1)\,J(1,3)\,, \qquad \text{(B.137)}$$

$$E\ w_1^2 w_3^2 = n\,J(4,4) + 2n(n-1)\,J(1,0)\,J(3,4) + 2n(n-1)\,J(1,2)\,J(3,2) + n(n-1)\,J(2,0)\,J(2,4)$$
$$+2n(n-1)\,J(2,2)\,J(2,2) + n(n-1)(n-2)\,J(1,0)\,J(1,0)\,J(2,4)$$
$$+4n(n-1)(n-2)\,J(1,0)\,J(1,2)\,J(2,2) + n(n-1)(n-2)\,J(1,2)\,J(1,2)\,J(2,0)$$
$$+n(n-1)(n-2)(n-3)\,J(1,0)\,J(1,0)\,J(1,2)\,J(1,2)\,, \qquad \text{(B.138)}$$

$$E\ w_1^2 w_3 w_4 = n\,J(4,5) + n(n-1)\,J(1,2)\,J(3,3) + n(n-1)\,J(1,3)\,J(3,2) + 2n(n-1)\,J(1,0)\,J(3,5)$$
$$+n(n-1)\,J(2,0)\,J(2,5) + 2n(n-1)\,J(2,2)\,J(2,3) + n(n-1)(n-2)\,J(1,0)\,J(1,0)\,J(2,5)$$
$$+2n(n-1)(n-2)\,J(1,0)\,J(1,2)\,J(2,3) + 2n(n-1)(n-2)\,J(1,0)\,J(1,3)\,J(2,2)$$
$$+n(n-1)(n-2)\,J(1,2)\,J(1,3)\,J(2,0)$$
$$+n(n-1)(n-2)(n-3)\,J(1,0)\,J(1,0)\,J(1,2)\,J(1,3)\,, \qquad \text{(B.139)}$$

$$E\ w_1^2 w_4^2 = n\,J(4,6) + 2n(n-1)\,J(1,0)\,J(3,6) + 2n(n-1)\,J(1,3)\,J(3,3) + n(n-1)\,J(2,0)\,J(2,6)$$
$$+2n(n-1)\,J(2,3)\,J(2,3) + n(n-1)(n-2)\,J(1,0)\,J(1,0)\,J(2,6)$$
$$+4n(n-1)(n-2)\,J(1,0)\,J(1,3)\,J(2,3) + n(n-1)(n-2)\,J(1,3)\,J(1,3)\,J(2,0)$$
$$+n(n-1)(n-2)(n-3)\,J(1,0)\,J(1,0)\,J(1,3)\,J(1,3)\,, \qquad \text{(B.140)}$$

$$E\ w_1 w_2^3 = n\,J(4,3) + n(n-1)\,J(1,0)\,J(3,3) + 3n(n-1)\,J(1,1)\,J(3,2) + 3n(n-1)\,J(2,1)\,J(2,2)$$
$$+3n(n-1)(n-2)\,J(1,1)\,J(1,1)\,J(2,1) + 3n(n-1)(n-2)\,J(1,1)\,J(1,0)\,J(2,2)$$
$$+n(n-1)(n-2)(n-3)\,J(1,0)\,J(1,1)\,J(1,1)\,J(1,1)\,, \qquad \text{(B.141)}$$

$$E\ w_1 w_2^2 w_3 = n\,J(4,4) + n(n-1)\,J(1,0)\,J(3,4) + n(n-1)\,J(1,2)\,J(3,2) + 2n(n-1)\,J(1,1)\,J(3,3)$$
$$+n(n-1)\,J(2,2)\,J(2,2) + 2n(n-1)\,J(2,1)\,J(2,3) + n(n-1)(n-2)\,J(1,1)\,J(1,1)\,J(2,2)$$
$$+2n(n-1)(n-2)\,J(1,0)\,J(1,1)\,J(2,3) + 2n(n-1)(n-2)\,J(1,1)\,J(1,2)\,J(2,1)$$
$$+n(n-1)(n-2)\,J(1,0)\,J(1,2)\,J(2,2)$$
$$+n(n-1)(n-2)(n-3)\,J(1,0)\,J(1,1)\,J(1,1)\,J(1,2)\,, \qquad \text{(B.142)}$$

$$E\ w_1 w_2^2 w_4 = n\,J(4,5) + n(n-1)\,J(1,0)\,J(3,5) + n(n-1)\,J(1,3)\,J(3,2) + 2n(n-1)\,J(1,1)\,J(3,4)$$
$$+n(n-1)\,J(2,2)\,J(2,3) + 2n(n-1)\,J(2,1)\,J(2,4) + n(n-1)(n-2)\,J(1,1)\,J(1,1)\,J(2,3)$$
$$+2n(n-1)(n-2)\,J(1,0)\,J(1,1)\,J(2,4) + 2n(n-1)(n-2)\,J(1,1)\,J(1,3)\,J(2,1)$$
$$+n(n-1)(n-2)\,J(1,0)\,J(1,3)\,J(2,2)$$
$$+n(n-1)(n-2)(n-3)\,J(1,0)\,J(1,1)\,J(1,1)\,J(1,3)\,, \qquad \text{(B.143)}$$

$$E\ w_1 w_2 w_3^2 = n\,J(4,5) + n(n-1)\,J(1,0)\,J(3,5) + n(n-1)\,J(1,1)\,J(3,4) + 2n(n-1)\,J(1,2)\,J(3,3)$$
$$+n(n-1)\,J(2,1)\,J(2,4) + 2n(n-1)\,J(2,2)\,J(2,3) + n(n-1)(n-2)\,J(1,2)\,J(1,2)\,J(2,1)$$
$$+2n(n-1)(n-2)\,J(1,0)\,J(1,2)\,J(2,3) + 2n(n-1)(n-2)\,J(1,1)\,J(1,2)\,J(2,2)$$
$$+n(n-1)(n-2)\,J(1,0)\,J(1,1)\,J(2,4)$$
$$+n(n-1)(n-2)(n-3)\,J(1,0)\,J(1,1)\,J(1,2)\,J(1,2)\,, \qquad \text{(B.144)}$$

$$E\ w_1w_2w_3w_4 = nJ(4,6)+n(n-1)J(1,0)J(3,6)+n(n-1)J(1,1)J(3,5)+n(n-1)J(1,2)J(3,4)$$
$$+n(n-1)J(1,3)J(3,3)+n(n-1)J(2,1)J(2,5)+n(n-1)J(2,2)J(2,4)$$
$$+n(n-1)J(2,3)J(2,3)+n(n-1)(n-2)J(1,0)J(1,1)J(2,5)$$
$$+n(n-1)(n-2)J(1,0)J(1,2)J(2,4)+n(n-1)(n-2)J(1,0)J(1,3)J(2,3)$$
$$+n(n-1)(n-2)J(1,1)J(1,2)J(2,3)+n(n-1)(n-2)J(1,1)J(1,3)J(2,2)$$
$$+n(n-1)(n-2)J(1,2)J(1,3)J(2,1)$$
$$+n(n-1)(n-2)(n-3)J(1,0)J(1,1)J(1,2)J(1,3), \quad \text{(B.145)}$$

$$E\ w_1w_2w_4^2 = nJ(4,7)+n(n-1)J(1,0)J(3,7)+n(n-1)J(1,1)J(3,6)+2n(n-1)J(1,3)J(3,4)$$
$$+n(n-1)J(2,1)J(2,6)+2n(n-1)J(2,3)J(2,4)+n(n-1)(n-2)J(1,3)J(1,3)J(2,1)$$
$$+2n(n-1)(n-2)J(1,0)J(1,3)J(2,4)+2n(n-1)(n-2)J(1,1)J(1,3)J(2,3)$$
$$+n(n-1)(n-2)J(1,0)J(1,1)J(2,6)$$
$$+n(n-1)(n-2)(n-3)J(1,0)J(1,1)J(1,3)J(1,3), \quad \text{(B.146)}$$

$$E\ w_1w_3^3 = nJ(4,6)+n(n-1)J(1,0)J(3,6)+3n(n-1)J(1,2)J(3,4)+3n(n-1)J(2,2)J(2,4)$$
$$+3n(n-1)(n-2)J(1,2)J(1,2)J(2,2)+3n(n-1)(n-2)J(1,2)J(1,0)J(2,4)$$
$$+n(n-1)(n-2)(n-3)J(1,0)J(1,2)J(1,2)J(1,2), \quad \text{(B.147)}$$

$$E\ w_1w_3^2w_4 = nJ(4,7)+n(n-1)J(1,0)J(3,7)+n(n-1)J(1,3)J(3,4)+2n(n-1)J(1,2)J(3,5)$$
$$+n(n-1)J(2,3)J(2,4)+2n(n-1)J(2,2)J(2,5)+n(n-1)(n-2)J(1,2)J(1,2)J(2,3)$$
$$+2n(n-1)(n-2)J(1,0)J(1,2)J(2,5)+2n(n-1)(n-2)J(1,2)J(1,3)J(2,2)$$
$$+n(n-1)(n-2)J(1,0)J(1,3)J(2,4)$$
$$+n(n-1)(n-2)(n-3)J(1,0)J(1,2)J(1,2)J(1,3), \quad \text{(B.148)}$$

$$E\ w_1w_3w_4^2 = nJ(4,8)+n(n-1)J(1,0)J(3,8)+n(n-1)J(1,2)J(3,6)+2n(n-1)J(1,3)J(3,5)$$
$$+n(n-1)J(2,2)J(2,6)+2n(n-1)J(2,3)J(2,5)+n(n-1)(n-2)J(1,3)J(1,3)J(2,2)$$
$$+2n(n-1)(n-2)J(1,0)J(1,3)J(2,5)+2n(n-1)(n-2)J(1,2)J(1,3)J(2,3)$$
$$+n(n-1)(n-2)J(1,0)J(1,2)J(2,6)$$
$$+n(n-1)(n-2)(n-3)J(1,0)J(1,2)J(1,3)J(1,3), \quad \text{(B.149)}$$

$$E\ w_1w_4^3 = nJ(4,9)+n(n-1)J(1,0)J(3,9)+3n(n-1)J(1,3)J(3,6)+3n(n-1)J(2,3)J(2,6)$$
$$+3n(n-1)(n-2)J(1,3)J(1,3)J(2,3)+3n(n-1)(n-2)J(1,3)J(1,0)J(2,6)$$
$$+n(n-1)(n-2)(n-3)J(1,0)J(1,3)J(1,3)J(1,3), \quad \text{(B.150)}$$

$$E\ w_2^4 = nJ(4,4)+4n(n-1)J(1,1)J(3,3)+3n(n-1)J(2,2)J(2,2)+6n(n-1)(n-2)J(1,1)J(1,1)J(2,2)$$
$$+n(n-1)(n-2)(n-3)J(1,1)J(1,1)J(1,1)J(1,1), \quad \text{(B.151)}$$

$$E\ w_2^3w_3 = nJ(4,5)+n(n-1)J(1,2)J(3,3)+3n(n-1)J(1,1)J(3,4)+3n(n-1)J(2,2)J(2,3)$$
$$+3n(n-1)(n-2)J(1,1)J(1,1)J(2,3)+3n(n-1)(n-2)J(1,1)J(1,2)J(2,2)$$
$$+n(n-1)(n-2)(n-3)J(1,1)J(1,1)J(1,1)J(1,2), \quad \text{(B.152)}$$

$$E\ w_2^3w_4 = nJ(4,6)+n(n-1)J(1,3)J(3,3)+3n(n-1)J(1,1)J(3,5)+3n(n-1)J(2,2)J(2,4)$$
$$+3n(n-1)(n-2)J(1,1)J(1,1)J(2,4)+3n(n-1)(n-2)J(1,1)J(1,3)J(2,2)$$
$$+n(n-1)(n-2)(n-3)J(1,1)J(1,1)J(1,1)J(1,3), \quad \text{(B.153)}$$

$$E\ w_2^2w_3^2 = nJ(4,6)+2n(n-1)J(1,1)J(3,5)+2n(n-1)J(1,2)J(3,4)+n(n-1)J(2,2)J(2,4)$$
$$+2n(n-1)J(2,3)J(2,3)+n(n-1)(n-2)J(1,1)J(1,1)J(2,4)$$
$$+4n(n-1)(n-2)J(1,1)J(1,2)J(2,3)+n(n-1)(n-2)J(1,2)J(1,2)J(2,2)$$
$$+n(n-1)(n-2)(n-3)J(1,1)J(1,1)J(1,2)J(1,2), \quad \text{(B.154)}$$

$$E\ w_2^2 w_3 w_4 = nJ(4,7) + n(n-1)J(1,2)J(3,5) + n(n-1)J(1,3)J(3,4) + 2n(n-1)J(1,1)J(3,6)$$
$$+n(n-1)J(2,2)J(2,5) + 2n(n-1)J(2,3)J(2,4) + n(n-1)(n-2)J(1,1)J(1,1)J(2,5)$$
$$+2n(n-1)(n-2)J(1,1)J(1,2)J(2,4) + 2n(n-1)(n-2)J(1,1)J(1,3)J(2,3)$$
$$+n(n-1)(n-2)J(1,2)J(1,3)J(2,2)$$
$$+n(n-1)(n-2)(n-3)J(1,1)J(1,1)J(1,2)J(1,3), \quad \text{(B.155)}$$

$$E\ w_2^2 w_4^2 = nJ(4,8) + 2n(n-1)J(1,1)J(3,7) + 2n(n-1)J(1,3)J(3,5) + n(n-1)J(2,2)J(2,6)$$
$$+2n(n-1)J(2,4)J(2,4) + n(n-1)(n-2)J(1,1)J(1,1)J(2,6)$$
$$+4n(n-1)(n-2)J(1,1)J(1,3)J(2,4) + n(n-1)(n-2)J(1,3)J(1,3)J(2,2)$$
$$+n(n-1)(n-2)(n-3)J(1,1)J(1,1)J(1,3)J(1,3), \quad \text{(B.156)}$$

$$E\ w_2 w_3^3 = nJ(4,7) + n(n-1)J(1,1)J(3,6) + 3n(n-1)J(1,2)J(3,5) + 3n(n-1)J(2,3)J(2,4)$$
$$+3n(n-1)(n-2)J(1,2)J(1,2)J(2,3) + 3n(n-1)(n-2)J(1,1)J(1,2)J(2,4)$$
$$+n(n-1)(n-2)(n-3)J(1,1)J(1,2)J(1,2)J(1,2), \quad \text{(B.157)}$$

$$E\ w_2 w_3^2 w_4 = nJ(4,8) + n(n-1)J(1,1)J(3,7) + n(n-1)J(1,3)J(3,5) + 2n(n-1)J(1,2)J(3,6)$$
$$+n(n-1)J(2,4)J(2,4) + 2n(n-1)J(2,3)J(2,5) + n(n-1)(n-2)J(1,2)J(1,2)J(2,4)$$
$$+2n(n-1)(n-2)J(1,1)J(1,2)J(2,5) + 2n(n-1)(n-2)J(1,2)J(1,3)J(2,3)$$
$$+n(n-1)(n-2)J(1,1)J(1,3)J(2,4)$$
$$+n(n-1)(n-2)(n-3)J(1,1)J(1,2)J(1,2)J(1,3), \quad \text{(B.158)}$$

$$E\ w_2 w_3 w_4^2 = nJ(4,9) + n(n-1)J(1,1)J(3,8) + n(n-1)J(1,2)J(3,7) + 2n(n-1)J(1,3)J(3,6)$$
$$+n(n-1)J(2,3)J(2,6) + 2n(n-1)J(2,4)J(2,5) + n(n-1)(n-2)J(1,3)J(1,3)J(2,3)$$
$$+2n(n-1)(n-2)J(1,1)J(1,3)J(2,5) + 2n(n-1)(n-2)J(1,2)J(1,3)J(2,4)$$
$$+n(n-1)(n-2)J(1,1)J(1,2)J(2,6)$$
$$+n(n-1)(n-2)(n-3)J(1,1)J(1,2)J(1,3)J(1,3), \quad \text{(B.159)}$$

$$E\ w_2 w_4^3 = nJ(4,10) + n(n-1)J(1,1)J(3,9) + 3n(n-1)J(1,3)J(3,7) + 3n(n-1)J(2,4)J(2,6)$$
$$+3n(n-1)(n-2)J(1,3)J(1,3)J(2,4) + 3n(n-1)(n-2)J(1,1)J(1,3)J(2,6)$$
$$+n(n-1)(n-2)(n-3)J(1,1)J(1,3)J(1,3)J(1,3), \quad \text{(B.160)}$$

$$E\ w_3^4 = nJ(4,8) + 4n(n-1)J(3,6)J(1,2) + 3n(n-1)J(2,4)J(2,4)$$
$$+6n(n-1)(n-2)J(1,2)J(1,2)J(2,4) + n(n-1)(n-2)(n-3)J(1,2)J(1,2)J(1,2)J(1,2), \quad \text{(B.161)}$$

$$E\ w_3^3 w_4 = nJ(4,9) + n(n-1)J(1,3)J(3,6) + 3n(n-1)J(1,2)J(3,7) + 3n(n-1)J(2,4)J(2,5)$$
$$+3n(n-1)(n-2)J(1,2)J(1,2)J(2,5) + 3n(n-1)(n-2)J(1,2)J(1,3)J(2,4)$$
$$+n(n-1)(n-2)(n-3)J(1,2)J(1,2)J(1,2)J(1,3), \quad \text{(B.162)}$$

$$E\ w_3^2 w_4^2 = nJ(4,10) + 2n(n-1)J(1,2)J(3,8) + 2n(n-1)J(1,3)J(3,7) + n(n-1)J(2,4)J(2,6)$$
$$+2n(n-1)J(2,5)J(2,5) + n(n-1)(n-2)J(1,2)J(1,2)J(2,6)$$
$$+4n(n-1)(n-2)J(1,2)J(1,3)J(2,5) + n(n-1)(n-2)J(1,3)J(1,3)J(2,4)$$
$$+n(n-1)(n-2)(n-3)J(1,2)J(1,2)J(1,3)J(1,3), \quad \text{(B.163)}$$

$$E\ w_3 w_4^3 = nJ(4,11) + n(n-1)J(1,2)J(3,9) + 3n(n-1)J(1,3)J(3,8) + 3n(n-1)J(2,5)J(2,6)$$
$$+3n(n-1)(n-2)J(1,3)J(1,3)J(2,5) + 3n(n-1)(n-2)J(1,2)J(1,3)J(2,6)$$
$$+n(n-1)(n-2)(n-3)J(1,2)J(1,3)J(1,3)J(1,3), \quad \text{(B.164)}$$

$$E\ w_4^4 = nJ(4,12) + 4n(n-1)J(3,9)J(1,3) + 3n(n-1)J(2,6)J(2,6)$$
$$+6n(n-1)(n-2)J(1,3)J(1,3)J(2,6) + n(n-1)(n-2)(n-3)J(1,3)J(1,3)J(1,3)J(1,3). \quad \text{(B.165)}$$