

## Auxiliary Material

### Superpolies Used in Cube Attacks on TRIVIUM

In the auxiliary material, we give the detailed ANF of the superpolies we recovered which are used in the cube attacks on 841- and 842-round of TRIVIUM.  $P_{I_6}$  in Section 1 and  $P_{I_7}$  in Section 2 are for the 841-round, while  $P_{I_9}$  in Section 3 and  $P_{I_{10}}$  in Section 4 are for 842-round. We emphasize that all the superpolies we recovered are balanced, and the key bit that is independent of other key bits in the ANF of each superpoly is colored in red.

#### 1 Superpoly $p_{I_6}$

Taking the cube of dimension 76 as

$$I_6 = \{0, 1, \dots, 69, 71, 73, 74, 75, 77, 79\}, \quad IV[70] = IV[72] = IV[76] = IV[78] = 0,$$

we recover the superpoly  $p_{I_6}$  for 841-Round TRIVIUM that has 3236 terms and we give it as the following

$$\begin{aligned} p_{I_6} = & 1 \oplus k_{78} \oplus k_{79}k_{77} \oplus k_{79}k_{76} \oplus k_{79}k_{78}k_{76} \oplus k_{77}k_{76} \oplus k_{79}k_{78}k_{77}k_{76} \oplus \\ & k_{79}k_{78}k_{75} \oplus k_{77}k_{75} \oplus k_{76}k_{75} \oplus k_{79}k_{76}k_{75} \oplus k_{78}k_{77}k_{76}k_{75} \oplus \\ & k_{79}k_{78}k_{77}k_{76}k_{75} \oplus k_{74} \oplus k_{75}k_{74} \oplus k_{79}k_{75}k_{74} \oplus k_{79}k_{78}k_{75}k_{74} \oplus \\ & k_{79}k_{78}k_{77}k_{75}k_{74} \oplus k_{78}k_{76}k_{75}k_{74} \oplus k_{79}k_{78}k_{73} \oplus k_{77}k_{74}k_{73} \oplus k_{76}k_{75}k_{74}k_{73} \oplus \\ & k_{72} \oplus k_{75}k_{72} \oplus k_{74}k_{72} \oplus k_{79}k_{78}k_{73}k_{72} \oplus k_{75}k_{73}k_{72} \oplus k_{71} \oplus k_{75}k_{71} \oplus \\ & k_{79}k_{78}k_{73}k_{71} \oplus k_{79}k_{78}k_{74}k_{72}k_{71} \oplus k_{73}k_{72}k_{71} \oplus k_{79}k_{78}k_{73}k_{72}k_{71} \oplus k_{70} \oplus \\ & k_{75}k_{71}k_{70} \oplus k_{74}k_{71}k_{70} \oplus k_{73}k_{71}k_{70} \oplus k_{74}k_{73}k_{71}k_{70} \oplus k_{72}k_{71}k_{70} \oplus \\ & k_{73}k_{72}k_{71}k_{70} \oplus k_{69} \oplus k_{74}k_{69} \oplus k_{73}k_{69} \oplus k_{73}k_{72}k_{69} \oplus k_{72}k_{71}k_{69} \oplus k_{70}k_{69} \oplus \\ & k_{75}k_{70}k_{69} \oplus k_{79}k_{78}k_{73}k_{70}k_{69} \oplus k_{72}k_{70}k_{69} \oplus k_{73}k_{72}k_{70}k_{69} \oplus k_{71}k_{70}k_{69} \oplus \\ & k_{79}k_{78}k_{72}k_{71}k_{70}k_{69} \oplus k_{74}k_{72}k_{71}k_{70}k_{69} \oplus k_{73}k_{72}k_{71}k_{70}k_{69} \oplus k_{68} \oplus k_{74}k_{68} \oplus \\ & k_{73}k_{72}k_{68} \oplus k_{71}k_{68} \oplus k_{74}k_{71}k_{68} \oplus k_{73}k_{72}k_{71}k_{68} \oplus k_{69}k_{68} \oplus k_{70}k_{69}k_{68} \oplus \\ & k_{74}k_{70}k_{69}k_{68} \oplus k_{73}k_{72}k_{70}k_{69}k_{68} \oplus k_{67} \oplus k_{74}k_{67} \oplus k_{73}k_{72}k_{67} \oplus k_{71}k_{67} \oplus \\ & k_{74}k_{71}k_{67} \oplus k_{73}k_{72}k_{71}k_{67} \oplus k_{70}k_{69}k_{67} \oplus k_{74}k_{70}k_{69}k_{67} \oplus k_{73}k_{72}k_{70}k_{69}k_{67} \oplus \\ & k_{68}k_{67} \oplus k_{73}k_{68}k_{67} \oplus k_{72}k_{71}k_{68}k_{67} \oplus k_{66} \oplus k_{74}k_{67}k_{66} \oplus k_{73}k_{72}k_{67}k_{66} \oplus \\ & k_{65} \oplus k_{66}k_{65} \oplus k_{74}k_{68}k_{66}k_{65} \oplus k_{73}k_{72}k_{68}k_{66}k_{65} \oplus k_{74}k_{67}k_{66}k_{65} \oplus \\ & k_{73}k_{72}k_{67}k_{66}k_{65} \oplus k_{65}k_{64} \oplus k_{67}k_{65}k_{64} \oplus k_{74}k_{67}k_{65}k_{64} \oplus k_{73}k_{72}k_{67}k_{65}k_{64} \oplus \\ & k_{71}k_{67}k_{65}k_{64} \oplus k_{74}k_{71}k_{67}k_{65}k_{64} \oplus k_{73}k_{72}k_{71}k_{67}k_{65}k_{64} \oplus k_{70}k_{69}k_{67}k_{65}k_{64} \oplus \\ & k_{74}k_{70}k_{69}k_{67}k_{65}k_{64} \oplus k_{73}k_{72}k_{70}k_{69}k_{67}k_{65}k_{64} \oplus k_{66}k_{65}k_{64} \oplus k_{74}k_{66}k_{65}k_{64} \oplus \\ & k_{73}k_{72}k_{66}k_{65}k_{64} \oplus k_{71}k_{66}k_{65}k_{64} \oplus k_{74}k_{71}k_{66}k_{65}k_{64} \oplus k_{73}k_{72}k_{71}k_{66}k_{65}k_{64} \oplus \\ & k_{70}k_{69}k_{66}k_{65}k_{64} \oplus k_{74}k_{70}k_{69}k_{66}k_{65}k_{64} \oplus k_{73}k_{72}k_{70}k_{69}k_{66}k_{65}k_{64} \oplus k_{63} \oplus \\ & k_{79}k_{63} \oplus k_{79}k_{78}k_{63} \oplus k_{78}k_{77}k_{63} \oplus k_{76}k_{63} \oplus k_{75}k_{63} \oplus k_{75}k_{74}k_{63} \oplus k_{73}k_{63} \oplus \end{aligned}$$

$$\begin{aligned}
& k_{74}k_{73}k_{63} \oplus k_{72}k_{63} \oplus k_{79}k_{78}k_{71}k_{63} \oplus k_{79}k_{78}k_{74}k_{71}k_{63} \oplus k_{73}k_{71}k_{63} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{71}k_{63} \oplus k_{71}k_{70}k_{63} \oplus k_{79}k_{78}k_{70}k_{69}k_{63} \oplus k_{79}k_{78}k_{74}k_{70}k_{69}k_{63} \oplus \\
& k_{73}k_{70}k_{69}k_{63} \oplus k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{63} \oplus k_{72}k_{71}k_{70}k_{69}k_{63} \oplus k_{78}k_{77}k_{62} \oplus \\
& k_{76}k_{62} \oplus k_{77}k_{76}k_{62} \oplus k_{79}k_{77}k_{76}k_{62} \oplus k_{78}k_{77}k_{76}k_{62} \oplus k_{75}k_{62} \oplus k_{77}k_{75}k_{62} \oplus \\
& k_{76}k_{75}k_{62} \oplus k_{74}k_{62} \oplus k_{79}k_{78}k_{74}k_{62} \oplus k_{77}k_{75}k_{74}k_{62} \oplus k_{76}k_{75}k_{74}k_{62} \oplus \\
& k_{79}k_{78}k_{73}k_{62} \oplus k_{74}k_{73}k_{62} \oplus k_{77}k_{74}k_{73}k_{62} \oplus k_{76}k_{74}k_{73}k_{62} \oplus k_{75}k_{74}k_{73}k_{62} \oplus \\
& k_{76}k_{75}k_{74}k_{73}k_{62} \oplus k_{73}k_{72}k_{62} \oplus k_{79}k_{78}k_{73}k_{72}k_{62} \oplus k_{74}k_{71}k_{62} \oplus k_{72}k_{71}k_{62} \oplus \\
& k_{79}k_{78}k_{72}k_{71}k_{62} \oplus k_{73}k_{72}k_{71}k_{62} \oplus k_{71}k_{70}k_{62} \oplus k_{74}k_{70}k_{69}k_{62} \oplus \\
& k_{72}k_{70}k_{69}k_{62} \oplus k_{73}k_{72}k_{70}k_{69}k_{62} \oplus k_{71}k_{70}k_{69}k_{62} \oplus k_{66}k_{62} \oplus k_{65}k_{62} \oplus \\
& k_{65}k_{64}k_{62} \oplus k_{78}k_{61} \oplus k_{79}k_{78}k_{61} \oplus k_{77}k_{76}k_{61} \oplus k_{79}k_{78}k_{73}k_{61} \oplus k_{71}k_{61} \oplus \\
& k_{74}k_{71}k_{61} \oplus k_{79}k_{78}k_{74}k_{71}k_{61} \oplus k_{72}k_{71}k_{61} \oplus k_{79}k_{78}k_{72}k_{71}k_{61} \oplus \\
& k_{73}k_{72}k_{71}k_{61} \oplus k_{79}k_{78}k_{73}k_{72}k_{71}k_{61} \oplus k_{71}k_{70}k_{61} \oplus k_{70}k_{69}k_{61} \oplus \\
& k_{74}k_{70}k_{69}k_{61} \oplus k_{79}k_{78}k_{74}k_{70}k_{69}k_{61} \oplus k_{72}k_{70}k_{69}k_{61} \oplus k_{73}k_{72}k_{70}k_{69}k_{61} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{61} \oplus k_{71}k_{70}k_{69}k_{61} \oplus k_{62}k_{61} \oplus k_{79}k_{62}k_{61} \oplus \\
& k_{78}k_{77}k_{62}k_{61} \oplus k_{76}k_{62}k_{61} \oplus k_{75}k_{62}k_{61} \oplus k_{75}k_{74}k_{62}k_{61} \oplus k_{74}k_{73}k_{62}k_{61} \oplus \\
& k_{71}k_{62}k_{61} \oplus k_{70}k_{69}k_{62}k_{61} \oplus k_{60} \oplus k_{79}k_{78}k_{60} \oplus k_{73}k_{60} \oplus k_{72}k_{60} \oplus k_{71}k_{60} \oplus \\
& k_{72}k_{71}k_{60} \oplus k_{71}k_{70}k_{60} \oplus k_{69}k_{60} \oplus k_{70}k_{69}k_{60} \oplus k_{68}k_{60} \oplus k_{68}k_{67}k_{60} \oplus \\
& k_{67}k_{66}k_{60} \oplus k_{76}k_{61}k_{60} \oplus k_{75}k_{61}k_{60} \oplus k_{77}k_{75}k_{61}k_{60} \oplus k_{74}k_{61}k_{60} \oplus \\
& k_{79}k_{78}k_{74}k_{61}k_{60} \oplus k_{73}k_{61}k_{60} \oplus k_{79}k_{78}k_{73}k_{61}k_{60} \oplus k_{74}k_{73}k_{61}k_{60} \oplus \\
& k_{77}k_{74}k_{73}k_{61}k_{60} \oplus k_{76}k_{74}k_{73}k_{61}k_{60} \oplus k_{75}k_{74}k_{73}k_{61}k_{60} \oplus \\
& k_{76}k_{75}k_{74}k_{73}k_{61}k_{60} \oplus k_{72}k_{61}k_{60} \oplus k_{73}k_{72}k_{61}k_{60} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{60} \oplus \\
& k_{71}k_{61}k_{60} \oplus k_{79}k_{78}k_{71}k_{61}k_{60} \oplus k_{74}k_{71}k_{61}k_{60} \oplus k_{79}k_{78}k_{74}k_{71}k_{61}k_{60} \oplus \\
& k_{73}k_{71}k_{61}k_{60} \oplus k_{72}k_{71}k_{61}k_{60} \oplus k_{79}k_{78}k_{72}k_{71}k_{61}k_{60} \oplus k_{73}k_{72}k_{71}k_{61}k_{60} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{71}k_{61}k_{60} \oplus k_{70}k_{69}k_{61}k_{60} \oplus k_{79}k_{78}k_{70}k_{69}k_{61}k_{60} \oplus \\
& k_{74}k_{70}k_{69}k_{61}k_{60} \oplus k_{79}k_{78}k_{74}k_{70}k_{69}k_{61}k_{60} \oplus k_{73}k_{70}k_{69}k_{61}k_{60} \oplus \\
& k_{72}k_{70}k_{69}k_{61}k_{60} \oplus k_{73}k_{72}k_{70}k_{69}k_{61}k_{60} \oplus k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{61}k_{60} \oplus \\
& k_{71}k_{70}k_{69}k_{61}k_{60} \oplus k_{72}k_{71}k_{70}k_{69}k_{61}k_{60} \oplus k_{59} \oplus k_{75}k_{59} \oplus k_{74}k_{59} \oplus \\
& k_{79}k_{78}k_{73}k_{59} \oplus k_{72}k_{59} \oplus k_{71}k_{59} \oplus k_{79}k_{78}k_{72}k_{71}k_{59} \oplus k_{74}k_{72}k_{71}k_{59} \oplus \\
& k_{73}k_{72}k_{71}k_{59} \oplus k_{71}k_{70}k_{59} \oplus k_{70}k_{69}k_{59} \oplus k_{68}k_{59} \oplus k_{74}k_{68}k_{59} \oplus \\
& k_{73}k_{72}k_{68}k_{59} \oplus k_{67}k_{59} \oplus k_{74}k_{67}k_{59} \oplus k_{73}k_{72}k_{67}k_{59} \oplus k_{67}k_{65}k_{64}k_{59} \oplus \\
& k_{74}k_{67}k_{65}k_{64}k_{59} \oplus k_{73}k_{72}k_{67}k_{65}k_{64}k_{59} \oplus k_{66}k_{65}k_{64}k_{59} \oplus k_{74}k_{66}k_{65}k_{64}k_{59} \oplus \\
& k_{73}k_{72}k_{66}k_{65}k_{64}k_{59} \oplus k_{79}k_{78}k_{63}k_{59} \oplus k_{79}k_{78}k_{74}k_{63}k_{59} \oplus k_{73}k_{63}k_{59} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{63}k_{59} \oplus k_{72}k_{71}k_{63}k_{59} \oplus k_{74}k_{62}k_{59} \oplus k_{72}k_{62}k_{59} \oplus \\
& k_{73}k_{72}k_{62}k_{59} \oplus k_{71}k_{70}k_{62}k_{59} \oplus k_{61}k_{59} \oplus k_{74}k_{61}k_{59} \oplus k_{79}k_{78}k_{74}k_{61}k_{59} \oplus \\
& k_{72}k_{61}k_{59} \oplus k_{73}k_{72}k_{61}k_{59} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{59} \oplus k_{71}k_{70}k_{61}k_{59} \oplus \\
& k_{62}k_{61}k_{59} \oplus k_{79}k_{78}k_{60}k_{59} \oplus k_{74}k_{60}k_{59} \oplus k_{79}k_{78}k_{74}k_{60}k_{59} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{79}k_{78}k_{73}k_{60}k_{59} \oplus k_{72}k_{60}k_{59} \oplus k_{73}k_{72}k_{60}k_{59} \oplus k_{79}k_{78}k_{73}k_{72}k_{60}k_{59} \oplus \\
& k_{71}k_{60}k_{59} \oplus k_{74}k_{71}k_{60}k_{59} \oplus k_{72}k_{71}k_{60}k_{59} \oplus k_{79}k_{78}k_{72}k_{71}k_{60}k_{59} \oplus \\
& k_{73}k_{72}k_{71}k_{60}k_{59} \oplus k_{70}k_{69}k_{60}k_{59} \oplus k_{74}k_{70}k_{69}k_{60}k_{59} \oplus k_{72}k_{70}k_{69}k_{60}k_{59} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{60}k_{59} \oplus k_{71}k_{70}k_{69}k_{60}k_{59} \oplus k_{79}k_{78}k_{62}k_{60}k_{59} \oplus \\
& k_{79}k_{78}k_{74}k_{62}k_{60}k_{59} \oplus k_{72}k_{62}k_{60}k_{59} \oplus k_{79}k_{78}k_{73}k_{72}k_{62}k_{60}k_{59} \oplus \\
& k_{79}k_{78}k_{71}k_{62}k_{60}k_{59} \oplus k_{79}k_{78}k_{74}k_{71}k_{62}k_{60}k_{59} \oplus k_{73}k_{71}k_{62}k_{60}k_{59} \oplus \\
& k_{72}k_{71}k_{62}k_{60}k_{59} \oplus k_{79}k_{78}k_{73}k_{72}k_{71}k_{62}k_{60}k_{59} \oplus k_{71}k_{70}k_{62}k_{60}k_{59} \oplus \\
& k_{79}k_{78}k_{70}k_{69}k_{62}k_{60}k_{59} \oplus k_{79}k_{78}k_{74}k_{70}k_{69}k_{62}k_{60}k_{59} \oplus k_{73}k_{70}k_{69}k_{62}k_{60}k_{59} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{62}k_{60}k_{59} \oplus k_{72}k_{71}k_{70}k_{69}k_{62}k_{60}k_{59} \oplus k_{79}k_{78}k_{61}k_{60}k_{59} \oplus \\
& k_{74}k_{61}k_{60}k_{59} \oplus k_{73}k_{61}k_{60}k_{59} \oplus k_{73}k_{72}k_{61}k_{60}k_{59} \oplus k_{71}k_{61}k_{60}k_{59} \oplus \\
& k_{79}k_{78}k_{71}k_{61}k_{60}k_{59} \oplus k_{79}k_{78}k_{74}k_{71}k_{61}k_{60}k_{59} \oplus k_{73}k_{71}k_{61}k_{60}k_{59} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{71}k_{61}k_{60}k_{59} \oplus k_{70}k_{69}k_{61}k_{60}k_{59} \oplus k_{79}k_{78}k_{70}k_{69}k_{61}k_{60}k_{59} \oplus \\
& k_{79}k_{78}k_{74}k_{70}k_{69}k_{61}k_{60}k_{59} \oplus k_{73}k_{70}k_{69}k_{61}k_{60}k_{59} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{61}k_{60}k_{59} \oplus k_{72}k_{71}k_{70}k_{69}k_{61}k_{60}k_{59} \oplus k_{79}k_{78}k_{58} \oplus \\
& k_{76}k_{58} \oplus k_{76}k_{75}k_{58} \oplus k_{74}k_{58} \oplus k_{79}k_{78}k_{73}k_{58} \oplus k_{74}k_{73}k_{58} \oplus k_{76}k_{74}k_{73}k_{58} \oplus \\
& k_{75}k_{74}k_{73}k_{58} \oplus k_{72}k_{58} \oplus k_{79}k_{78}k_{72}k_{71}k_{58} \oplus k_{74}k_{72}k_{71}k_{58} \oplus k_{73}k_{72}k_{71}k_{58} \oplus \\
& k_{71}k_{70}k_{58} \oplus k_{68}k_{58} \oplus k_{74}k_{68}k_{58} \oplus k_{73}k_{72}k_{68}k_{58} \oplus k_{67}k_{58} \oplus k_{74}k_{67}k_{58} \oplus \\
& k_{73}k_{72}k_{67}k_{58} \oplus k_{67}k_{65}k_{64}k_{58} \oplus k_{74}k_{67}k_{65}k_{64}k_{58} \oplus k_{73}k_{72}k_{67}k_{65}k_{64}k_{58} \oplus \\
& k_{66}k_{65}k_{64}k_{58} \oplus k_{74}k_{66}k_{65}k_{64}k_{58} \oplus k_{73}k_{72}k_{66}k_{65}k_{64}k_{58} \oplus k_{63}k_{58} \oplus \\
& k_{78}k_{63}k_{58} \oplus k_{79}k_{78}k_{63}k_{58} \oplus k_{77}k_{76}k_{63}k_{58} \oplus k_{79}k_{78}k_{74}k_{63}k_{58} \oplus k_{73}k_{63}k_{58} \oplus \\
& k_{72}k_{63}k_{58} \oplus k_{79}k_{78}k_{73}k_{72}k_{63}k_{58} \oplus k_{72}k_{71}k_{63}k_{58} \oplus k_{71}k_{70}k_{63}k_{58} \oplus \\
& k_{77}k_{62}k_{58} \oplus k_{76}k_{62}k_{58} \oplus k_{75}k_{62}k_{58} \oplus k_{74}k_{62}k_{58} \oplus k_{73}k_{62}k_{58} \oplus \\
& k_{74}k_{73}k_{62}k_{58} \oplus k_{76}k_{74}k_{73}k_{62}k_{58} \oplus k_{75}k_{74}k_{73}k_{62}k_{58} \oplus k_{72}k_{62}k_{58} \oplus \\
& k_{73}k_{72}k_{62}k_{58} \oplus k_{72}k_{71}k_{62}k_{58} \oplus k_{71}k_{70}k_{62}k_{58} \oplus k_{77}k_{61}k_{58} \oplus k_{76}k_{61}k_{58} \oplus \\
& k_{74}k_{61}k_{58} \oplus k_{79}k_{78}k_{74}k_{61}k_{58} \oplus k_{73}k_{61}k_{58} \oplus k_{76}k_{74}k_{73}k_{61}k_{58} \oplus \\
& k_{75}k_{74}k_{73}k_{61}k_{58} \oplus k_{72}k_{61}k_{58} \oplus k_{73}k_{72}k_{61}k_{58} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{58} \oplus \\
& k_{72}k_{71}k_{61}k_{58} \oplus k_{71}k_{70}k_{61}k_{58} \oplus k_{78}k_{62}k_{61}k_{58} \oplus k_{77}k_{76}k_{62}k_{61}k_{58} \oplus \\
& k_{79}k_{78}k_{61}k_{60}k_{58} \oplus k_{77}k_{61}k_{60}k_{58} \oplus k_{76}k_{61}k_{60}k_{58} \oplus k_{75}k_{61}k_{60}k_{58} \oplus \\
& k_{74}k_{61}k_{60}k_{58} \oplus k_{79}k_{78}k_{74}k_{61}k_{60}k_{58} \oplus k_{74}k_{73}k_{61}k_{60}k_{58} \oplus \\
& k_{76}k_{74}k_{73}k_{61}k_{60}k_{58} \oplus k_{75}k_{74}k_{73}k_{61}k_{60}k_{58} \oplus k_{73}k_{72}k_{61}k_{60}k_{58} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{61}k_{60}k_{58} \oplus k_{59}k_{58} \oplus k_{79}k_{78}k_{59}k_{58} \oplus k_{73}k_{59}k_{58} \oplus k_{72}k_{59}k_{58} \oplus \\
& k_{71}k_{59}k_{58} \oplus k_{72}k_{71}k_{59}k_{58} \oplus k_{71}k_{70}k_{59}k_{58} \oplus k_{70}k_{69}k_{59}k_{58} \oplus k_{77}k_{60}k_{59}k_{58} \oplus \\
& k_{76}k_{60}k_{59}k_{58} \oplus k_{74}k_{60}k_{59}k_{58} \oplus k_{73}k_{60}k_{59}k_{58} \oplus k_{76}k_{74}k_{73}k_{60}k_{59}k_{58} \oplus \\
& k_{75}k_{74}k_{73}k_{60}k_{59}k_{58} \oplus k_{72}k_{60}k_{59}k_{58} \oplus k_{73}k_{72}k_{60}k_{59}k_{58} \oplus k_{72}k_{71}k_{60}k_{59}k_{58} \oplus \\
& k_{71}k_{70}k_{60}k_{59}k_{58} \oplus k_{79}k_{78}k_{62}k_{60}k_{59}k_{58} \oplus k_{79}k_{78}k_{74}k_{62}k_{60}k_{59}k_{58} \oplus \\
& k_{73}k_{62}k_{60}k_{59}k_{58} \oplus k_{72}k_{62}k_{60}k_{59}k_{58} \oplus k_{79}k_{78}k_{73}k_{72}k_{62}k_{60}k_{59}k_{58} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{72}k_{71}k_{62}k_{60}k_{59}k_{58} \oplus k_{71}k_{70}k_{62}k_{60}k_{59}k_{58} \oplus k_{61}k_{60}k_{59}k_{58} \oplus \\
& k_{79}k_{78}k_{61}k_{60}k_{59}k_{58} \oplus k_{79}k_{78}k_{74}k_{61}k_{60}k_{59}k_{58} \oplus k_{73}k_{61}k_{60}k_{59}k_{58} \oplus \\
& k_{72}k_{61}k_{60}k_{59}k_{58} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{60}k_{59}k_{58} \oplus k_{72}k_{71}k_{61}k_{60}k_{59}k_{58} \oplus \\
& k_{71}k_{70}k_{61}k_{60}k_{59}k_{58} \oplus k_{57} \oplus k_{73}k_{57} \oplus k_{72}k_{71}k_{57} \oplus k_{61}k_{57} \oplus k_{60}k_{57} \oplus \\
& k_{58}k_{57} \oplus k_{75}k_{58}k_{57} \oplus k_{74}k_{58}k_{57} \oplus k_{79}k_{78}k_{73}k_{58}k_{57} \oplus k_{72}k_{58}k_{57} \oplus \\
& k_{71}k_{58}k_{57} \oplus k_{79}k_{78}k_{72}k_{71}k_{58}k_{57} \oplus k_{74}k_{72}k_{71}k_{58}k_{57} \oplus k_{73}k_{72}k_{71}k_{58}k_{57} \oplus \\
& k_{71}k_{70}k_{58}k_{57} \oplus k_{70}k_{69}k_{58}k_{57} \oplus k_{68}k_{58}k_{57} \oplus k_{74}k_{68}k_{58}k_{57} \oplus \\
& k_{73}k_{72}k_{68}k_{58}k_{57} \oplus k_{67}k_{58}k_{57} \oplus k_{74}k_{67}k_{58}k_{57} \oplus k_{73}k_{72}k_{67}k_{58}k_{57} \oplus \\
& k_{67}k_{63}k_{64}k_{58}k_{57} \oplus k_{74}k_{67}k_{65}k_{64}k_{58}k_{57} \oplus k_{73}k_{72}k_{67}k_{65}k_{64}k_{58}k_{57} \oplus \\
& k_{66}k_{63}k_{64}k_{58}k_{57} \oplus k_{74}k_{66}k_{65}k_{64}k_{58}k_{57} \oplus k_{73}k_{72}k_{66}k_{65}k_{64}k_{58}k_{57} \oplus \\
& k_{79}k_{78}k_{63}k_{58}k_{57} \oplus k_{79}k_{78}k_{74}k_{63}k_{58}k_{57} \oplus k_{73}k_{63}k_{58}k_{57} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{63}k_{58}k_{57} \oplus k_{72}k_{71}k_{63}k_{58}k_{57} \oplus k_{74}k_{62}k_{58}k_{57} \oplus k_{72}k_{62}k_{58}k_{57} \oplus \\
& k_{73}k_{72}k_{62}k_{58}k_{57} \oplus k_{71}k_{70}k_{62}k_{58}k_{57} \oplus k_{61}k_{58}k_{57} \oplus k_{74}k_{61}k_{58}k_{57} \oplus \\
& k_{79}k_{78}k_{74}k_{61}k_{58}k_{57} \oplus k_{72}k_{61}k_{58}k_{57} \oplus k_{73}k_{72}k_{61}k_{58}k_{57} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{61}k_{58}k_{57} \oplus k_{71}k_{70}k_{61}k_{58}k_{57} \oplus k_{62}k_{61}k_{58}k_{57} \oplus k_{60}k_{58}k_{57} \oplus \\
& k_{61}k_{60}k_{58}k_{57} \oplus k_{79}k_{78}k_{61}k_{60}k_{58}k_{57} \oplus k_{74}k_{61}k_{60}k_{58}k_{57} \oplus \\
& k_{79}k_{78}k_{74}k_{61}k_{60}k_{58}k_{57} \oplus k_{73}k_{61}k_{60}k_{58}k_{57} \oplus k_{72}k_{61}k_{60}k_{58}k_{57} \oplus \\
& k_{73}k_{72}k_{61}k_{60}k_{58}k_{57} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{60}k_{58}k_{57} \oplus k_{72}k_{71}k_{61}k_{60}k_{58}k_{57} \oplus \\
& k_{71}k_{70}k_{61}k_{60}k_{58}k_{57} \oplus k_{59}k_{58}k_{57} \oplus k_{60}k_{59}k_{58}k_{57} \oplus k_{74}k_{60}k_{59}k_{58}k_{57} \oplus \\
& k_{72}k_{60}k_{59}k_{58}k_{57} \oplus k_{73}k_{72}k_{60}k_{59}k_{58}k_{57} \oplus k_{71}k_{70}k_{60}k_{59}k_{58}k_{57} \oplus \\
& k_{79}k_{78}k_{62}k_{60}k_{59}k_{58}k_{57} \oplus k_{79}k_{78}k_{74}k_{62}k_{60}k_{59}k_{58}k_{57} \oplus k_{73}k_{62}k_{60}k_{59}k_{58}k_{57} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{62}k_{60}k_{59}k_{58}k_{57} \oplus k_{72}k_{71}k_{62}k_{60}k_{59}k_{58}k_{57} \oplus k_{61}k_{60}k_{59}k_{58}k_{57} \oplus \\
& k_{79}k_{78}k_{61}k_{60}k_{59}k_{58}k_{57} \oplus k_{79}k_{78}k_{74}k_{61}k_{60}k_{59}k_{58}k_{57} \oplus k_{73}k_{61}k_{60}k_{59}k_{58}k_{57} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{61}k_{60}k_{59}k_{58}k_{57} \oplus k_{72}k_{71}k_{61}k_{60}k_{59}k_{58}k_{57} \oplus k_{56} \oplus k_{74}k_{56} \oplus \\
& k_{73}k_{56} \oplus k_{73}k_{72}k_{56} \oplus k_{72}k_{71}k_{56} \oplus k_{62}k_{56} \oplus k_{60}k_{56} \oplus k_{62}k_{60}k_{56} \oplus \\
& k_{79}k_{78}k_{55} \oplus k_{79}k_{78}k_{74}k_{55} \oplus k_{73}k_{55} \oplus k_{79}k_{78}k_{73}k_{72}k_{55} \oplus k_{71}k_{55} \oplus \\
& k_{79}k_{78}k_{74}k_{71}k_{55} \oplus k_{72}k_{71}k_{55} \oplus k_{79}k_{78}k_{73}k_{72}k_{71}k_{55} \oplus k_{70}k_{69}k_{55} \oplus \\
& k_{79}k_{78}k_{74}k_{70}k_{69}k_{55} \oplus k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{55} \oplus k_{79}k_{78}k_{62}k_{55} \oplus k_{71}k_{62}k_{55} \oplus \\
& k_{70}k_{69}k_{62}k_{55} \oplus k_{79}k_{78}k_{61}k_{55} \oplus k_{71}k_{61}k_{55} \oplus k_{70}k_{69}k_{61}k_{55} \oplus \\
& k_{79}k_{78}k_{61}k_{60}k_{55} \oplus k_{71}k_{61}k_{60}k_{55} \oplus k_{70}k_{69}k_{61}k_{60}k_{55} \oplus k_{59}k_{55} \oplus \\
& k_{79}k_{78}k_{74}k_{59}k_{55} \oplus k_{79}k_{78}k_{73}k_{72}k_{59}k_{55} \oplus k_{62}k_{59}k_{55} \oplus k_{61}k_{59}k_{55} \oplus \\
& k_{60}k_{59}k_{55} \oplus k_{79}k_{78}k_{60}k_{59}k_{55} \oplus k_{71}k_{60}k_{59}k_{55} \oplus k_{70}k_{69}k_{60}k_{59}k_{55} \oplus \\
& k_{61}k_{60}k_{59}k_{55} \oplus k_{58}k_{55} \oplus k_{79}k_{78}k_{74}k_{58}k_{55} \oplus k_{79}k_{78}k_{73}k_{72}k_{58}k_{55} \oplus \\
& k_{62}k_{58}k_{55} \oplus k_{61}k_{58}k_{55} \oplus k_{61}k_{60}k_{58}k_{55} \oplus k_{60}k_{59}k_{58}k_{55} \oplus k_{58}k_{57}k_{55} \oplus \\
& k_{79}k_{78}k_{74}k_{58}k_{57}k_{55} \oplus k_{79}k_{78}k_{73}k_{72}k_{58}k_{57}k_{55} \oplus k_{62}k_{58}k_{57}k_{55} \oplus \\
& k_{61}k_{58}k_{57}k_{55} \oplus k_{61}k_{60}k_{58}k_{57}k_{55} \oplus k_{60}k_{59}k_{58}k_{57}k_{55} \oplus k_{56}k_{55} \oplus k_{73}k_{56}k_{55} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{72}k_{71}k_{56}k_{55} \oplus k_{60}k_{56}k_{55} \oplus k_{54} \oplus k_{77}k_{54} \oplus k_{75}k_{54} \oplus k_{75}k_{74}k_{54} \oplus \\
& k_{74}k_{73}k_{54} \oplus k_{76}k_{74}k_{73}k_{54} \oplus k_{75}k_{74}k_{73}k_{54} \oplus k_{71}k_{54} \oplus k_{73}k_{71}k_{54} \oplus \\
& k_{72}k_{71}k_{54} \oplus k_{70}k_{69}k_{54} \oplus k_{73}k_{70}k_{69}k_{54} \oplus k_{72}k_{71}k_{70}k_{69}k_{54} \oplus k_{74}k_{63}k_{54} \oplus \\
& k_{73}k_{72}k_{63}k_{54} \oplus k_{71}k_{63}k_{54} \oplus k_{70}k_{69}k_{63}k_{54} \oplus k_{76}k_{62}k_{54} \oplus k_{75}k_{74}k_{62}k_{54} \oplus \\
& k_{71}k_{62}k_{54} \oplus k_{74}k_{71}k_{62}k_{54} \oplus k_{73}k_{72}k_{71}k_{62}k_{54} \oplus k_{70}k_{69}k_{62}k_{54} \oplus \\
& k_{74}k_{70}k_{69}k_{62}k_{54} \oplus k_{73}k_{72}k_{70}k_{69}k_{62}k_{54} \oplus k_{61}k_{54} \oplus k_{71}k_{61}k_{54} \oplus \\
& k_{74}k_{71}k_{61}k_{54} \oplus k_{73}k_{72}k_{71}k_{61}k_{54} \oplus k_{70}k_{69}k_{61}k_{54} \oplus k_{74}k_{70}k_{69}k_{61}k_{54} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{61}k_{54} \oplus k_{76}k_{61}k_{60}k_{54} \oplus k_{74}k_{61}k_{60}k_{54} \oplus k_{75}k_{74}k_{61}k_{60}k_{54} \oplus \\
& k_{73}k_{72}k_{61}k_{60}k_{54} \oplus k_{74}k_{71}k_{61}k_{60}k_{54} \oplus k_{73}k_{72}k_{71}k_{61}k_{60}k_{54} \oplus \\
& k_{74}k_{70}k_{69}k_{61}k_{60}k_{54} \oplus k_{73}k_{72}k_{70}k_{69}k_{61}k_{60}k_{54} \oplus k_{59}k_{54} \oplus k_{73}k_{59}k_{54} \oplus \\
& k_{72}k_{71}k_{59}k_{54} \oplus k_{63}k_{59}k_{54} \oplus k_{62}k_{59}k_{54} \oplus k_{74}k_{62}k_{59}k_{54} \oplus k_{73}k_{72}k_{62}k_{59}k_{54} \oplus \\
& k_{61}k_{59}k_{54} \oplus k_{74}k_{61}k_{59}k_{54} \oplus k_{73}k_{72}k_{61}k_{59}k_{54} \oplus k_{74}k_{60}k_{59}k_{54} \oplus \\
& k_{73}k_{72}k_{60}k_{59}k_{54} \oplus k_{71}k_{60}k_{59}k_{54} \oplus k_{74}k_{71}k_{60}k_{59}k_{54} \oplus k_{73}k_{72}k_{71}k_{60}k_{59}k_{54} \oplus \\
& k_{70}k_{69}k_{60}k_{59}k_{54} \oplus k_{74}k_{70}k_{69}k_{60}k_{59}k_{54} \oplus k_{73}k_{72}k_{70}k_{69}k_{60}k_{59}k_{54} \oplus \\
& k_{62}k_{60}k_{59}k_{54} \oplus k_{74}k_{62}k_{60}k_{59}k_{54} \oplus k_{73}k_{72}k_{62}k_{60}k_{59}k_{54} \oplus k_{71}k_{62}k_{60}k_{59}k_{54} \oplus \\
& k_{70}k_{69}k_{62}k_{60}k_{59}k_{54} \oplus k_{61}k_{60}k_{59}k_{54} \oplus k_{71}k_{61}k_{60}k_{59}k_{54} \oplus \\
& k_{70}k_{69}k_{61}k_{60}k_{59}k_{54} \oplus k_{73}k_{58}k_{54} \oplus k_{72}k_{71}k_{58}k_{54} \oplus k_{63}k_{58}k_{54} \oplus k_{62}k_{58}k_{54} \oplus \\
& k_{74}k_{62}k_{58}k_{54} \oplus k_{73}k_{72}k_{62}k_{58}k_{54} \oplus k_{61}k_{58}k_{54} \oplus k_{74}k_{61}k_{58}k_{54} \oplus \\
& k_{73}k_{72}k_{61}k_{58}k_{54} \oplus k_{74}k_{61}k_{60}k_{58}k_{54} \oplus k_{73}k_{72}k_{61}k_{60}k_{58}k_{54} \oplus k_{60}k_{59}k_{58}k_{54} \oplus \\
& k_{74}k_{60}k_{59}k_{58}k_{54} \oplus k_{73}k_{72}k_{60}k_{59}k_{58}k_{54} \oplus k_{62}k_{60}k_{59}k_{58}k_{54} \oplus \\
& k_{61}k_{60}k_{59}k_{58}k_{54} \oplus k_{58}k_{57}k_{54} \oplus k_{73}k_{58}k_{57}k_{54} \oplus k_{72}k_{71}k_{58}k_{57}k_{54} \oplus \\
& k_{63}k_{58}k_{57}k_{54} \oplus k_{62}k_{58}k_{57}k_{54} \oplus k_{74}k_{62}k_{58}k_{57}k_{54} \oplus k_{73}k_{72}k_{62}k_{58}k_{57}k_{54} \oplus \\
& k_{61}k_{58}k_{57}k_{54} \oplus k_{74}k_{61}k_{58}k_{57}k_{54} \oplus k_{73}k_{72}k_{61}k_{58}k_{57}k_{54} \oplus \\
& k_{74}k_{61}k_{60}k_{58}k_{57}k_{54} \oplus k_{73}k_{72}k_{61}k_{60}k_{58}k_{57}k_{54} \oplus k_{60}k_{59}k_{58}k_{57}k_{54} \oplus \\
& k_{74}k_{60}k_{59}k_{58}k_{57}k_{54} \oplus k_{73}k_{72}k_{60}k_{59}k_{58}k_{57}k_{54} \oplus k_{62}k_{60}k_{59}k_{58}k_{57}k_{54} \oplus \\
& k_{61}k_{60}k_{59}k_{58}k_{57}k_{54} \oplus k_{55}k_{54} \oplus k_{79}k_{53} \oplus k_{77}k_{53} \oplus k_{79}k_{77}k_{53} \oplus k_{79}k_{76}k_{53} \oplus \\
& k_{78}k_{77}k_{76}k_{53} \oplus k_{75}k_{53} \oplus k_{76}k_{75}k_{53} \oplus k_{79}k_{76}k_{75}k_{53} \oplus k_{78}k_{77}k_{76}k_{75}k_{53} \oplus \\
& k_{74}k_{53} \oplus k_{79}k_{75}k_{74}k_{53} \oplus k_{78}k_{77}k_{75}k_{74}k_{53} \oplus k_{73}k_{53} \oplus k_{71}k_{53} \oplus k_{74}k_{71}k_{53} \oplus \\
& k_{73}k_{71}k_{53} \oplus k_{74}k_{72}k_{71}k_{53} \oplus k_{70}k_{69}k_{53} \oplus k_{74}k_{70}k_{69}k_{53} \oplus k_{73}k_{70}k_{69}k_{53} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{53} \oplus k_{72}k_{71}k_{70}k_{69}k_{53} \oplus k_{63}k_{53} \oplus k_{71}k_{63}k_{53} \oplus k_{74}k_{71}k_{63}k_{53} \oplus \\
& k_{73}k_{72}k_{71}k_{63}k_{53} \oplus k_{70}k_{69}k_{63}k_{53} \oplus k_{74}k_{70}k_{69}k_{63}k_{53} \oplus k_{73}k_{72}k_{70}k_{69}k_{63}k_{53} \oplus \\
& k_{62}k_{53} \oplus k_{74}k_{62}k_{53} \oplus k_{73}k_{62}k_{53} \oplus k_{73}k_{72}k_{62}k_{53} \oplus k_{72}k_{71}k_{62}k_{53} \oplus k_{61}k_{53} \oplus \\
& k_{73}k_{61}k_{53} \oplus k_{74}k_{71}k_{61}k_{53} \oplus k_{72}k_{71}k_{61}k_{53} \oplus k_{73}k_{72}k_{71}k_{61}k_{53} \oplus \\
& k_{74}k_{70}k_{69}k_{61}k_{53} \oplus k_{73}k_{72}k_{70}k_{69}k_{61}k_{53} \oplus k_{60}k_{53} \oplus k_{74}k_{61}k_{60}k_{53} \oplus \\
& k_{73}k_{61}k_{60}k_{53} \oplus k_{73}k_{72}k_{61}k_{60}k_{53} \oplus k_{71}k_{61}k_{60}k_{53} \oplus k_{74}k_{71}k_{61}k_{60}k_{53} \oplus \\
& k_{72}k_{71}k_{61}k_{60}k_{53} \oplus k_{73}k_{72}k_{71}k_{61}k_{60}k_{53} \oplus k_{70}k_{69}k_{61}k_{60}k_{53} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{74}k_{70}k_{69}k_{61}k_{60}k_{53} \oplus k_{73}k_{72}k_{70}k_{69}k_{61}k_{60}k_{53} \oplus k_{59}k_{53} \oplus k_{74}k_{59}k_{53} \oplus \\
& k_{73}k_{59}k_{53} \oplus k_{73}k_{72}k_{59}k_{53} \oplus k_{72}k_{71}k_{59}k_{53} \oplus k_{63}k_{59}k_{53} \oplus k_{74}k_{63}k_{59}k_{53} \oplus \\
& k_{73}k_{72}k_{63}k_{59}k_{53} \oplus k_{74}k_{61}k_{59}k_{53} \oplus k_{73}k_{72}k_{61}k_{59}k_{53} \oplus k_{60}k_{59}k_{53} \oplus \\
& k_{74}k_{60}k_{59}k_{53} \oplus k_{73}k_{60}k_{59}k_{53} \oplus k_{73}k_{72}k_{60}k_{59}k_{53} \oplus k_{72}k_{71}k_{60}k_{59}k_{53} \oplus \\
& k_{62}k_{60}k_{59}k_{53} \oplus k_{74}k_{62}k_{60}k_{59}k_{53} \oplus k_{73}k_{72}k_{62}k_{60}k_{59}k_{53} \oplus k_{71}k_{62}k_{60}k_{59}k_{53} \oplus \\
& k_{74}k_{71}k_{62}k_{60}k_{59}k_{53} \oplus k_{73}k_{72}k_{71}k_{62}k_{60}k_{59}k_{53} \oplus k_{70}k_{69}k_{62}k_{60}k_{59}k_{53} \oplus \\
& k_{74}k_{70}k_{69}k_{62}k_{60}k_{59}k_{53} \oplus k_{73}k_{72}k_{70}k_{69}k_{62}k_{60}k_{59}k_{53} \oplus k_{61}k_{60}k_{59}k_{53} \oplus \\
& k_{71}k_{61}k_{60}k_{59}k_{53} \oplus k_{74}k_{71}k_{61}k_{60}k_{59}k_{53} \oplus k_{73}k_{72}k_{71}k_{61}k_{60}k_{59}k_{53} \oplus \\
& k_{70}k_{69}k_{61}k_{60}k_{59}k_{53} \oplus k_{74}k_{70}k_{69}k_{61}k_{60}k_{59}k_{53} \oplus k_{73}k_{72}k_{70}k_{69}k_{61}k_{60}k_{59}k_{53} \oplus \\
& k_{74}k_{58}k_{53} \oplus k_{73}k_{58}k_{53} \oplus k_{73}k_{72}k_{58}k_{53} \oplus k_{72}k_{71}k_{58}k_{53} \oplus k_{63}k_{58}k_{53} \oplus \\
& k_{74}k_{63}k_{58}k_{53} \oplus k_{73}k_{72}k_{63}k_{58}k_{53} \oplus k_{74}k_{61}k_{58}k_{53} \oplus k_{73}k_{72}k_{61}k_{58}k_{53} \oplus \\
& k_{61}k_{60}k_{58}k_{53} \oplus k_{74}k_{61}k_{60}k_{58}k_{53} \oplus k_{73}k_{72}k_{61}k_{60}k_{58}k_{53} \oplus k_{59}k_{58}k_{53} \oplus \\
& k_{62}k_{60}k_{59}k_{58}k_{53} \oplus k_{74}k_{62}k_{60}k_{59}k_{58}k_{53} \oplus k_{73}k_{72}k_{62}k_{60}k_{59}k_{58}k_{53} \oplus \\
& k_{61}k_{60}k_{59}k_{58}k_{53} \oplus k_{74}k_{61}k_{60}k_{59}k_{58}k_{53} \oplus k_{73}k_{72}k_{61}k_{60}k_{59}k_{58}k_{53} \oplus \\
& k_{58}k_{57}k_{53} \oplus k_{74}k_{58}k_{57}k_{53} \oplus k_{73}k_{58}k_{57}k_{53} \oplus k_{73}k_{72}k_{58}k_{57}k_{53} \oplus \\
& k_{72}k_{71}k_{58}k_{57}k_{53} \oplus k_{63}k_{58}k_{57}k_{53} \oplus k_{74}k_{63}k_{58}k_{57}k_{53} \oplus k_{73}k_{72}k_{63}k_{58}k_{57}k_{53} \oplus \\
& k_{74}k_{61}k_{58}k_{57}k_{53} \oplus k_{73}k_{72}k_{61}k_{58}k_{57}k_{53} \oplus k_{61}k_{60}k_{58}k_{57}k_{53} \oplus \\
& k_{74}k_{61}k_{60}k_{58}k_{57}k_{53} \oplus k_{73}k_{72}k_{61}k_{60}k_{58}k_{57}k_{53} \oplus k_{62}k_{60}k_{59}k_{58}k_{57}k_{53} \oplus \\
& k_{74}k_{62}k_{60}k_{59}k_{58}k_{57}k_{53} \oplus k_{73}k_{72}k_{62}k_{60}k_{59}k_{58}k_{57}k_{53} \oplus k_{61}k_{60}k_{59}k_{58}k_{57}k_{53} \oplus \\
& k_{74}k_{61}k_{60}k_{59}k_{58}k_{57}k_{53} \oplus k_{73}k_{72}k_{61}k_{60}k_{59}k_{58}k_{57}k_{53} \oplus k_{55}k_{53} \oplus k_{74}k_{55}k_{53} \oplus \\
& k_{73}k_{72}k_{55}k_{53} \oplus k_{74}k_{71}k_{55}k_{53} \oplus k_{73}k_{72}k_{71}k_{55}k_{53} \oplus k_{74}k_{70}k_{69}k_{55}k_{53} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{55}k_{53} \oplus k_{62}k_{55}k_{53} \oplus k_{61}k_{55}k_{53} \oplus k_{61}k_{60}k_{55}k_{53} \oplus \\
& k_{74}k_{59}k_{55}k_{53} \oplus k_{73}k_{72}k_{59}k_{55}k_{53} \oplus k_{60}k_{59}k_{55}k_{53} \oplus k_{74}k_{58}k_{55}k_{53} \oplus \\
& k_{73}k_{72}k_{58}k_{55}k_{53} \oplus k_{74}k_{58}k_{57}k_{55}k_{53} \oplus k_{73}k_{72}k_{58}k_{57}k_{55}k_{53} \oplus k_{79}k_{78}k_{52} \oplus \\
& k_{77}k_{52} \oplus k_{79}k_{78}k_{77}k_{52} \oplus k_{76}k_{52} \oplus k_{79}k_{78}k_{76}k_{52} \oplus k_{76}k_{75}k_{52} \oplus \\
& k_{79}k_{78}k_{76}k_{75}k_{52} \oplus k_{74}k_{52} \oplus k_{75}k_{74}k_{52} \oplus k_{79}k_{78}k_{75}k_{74}k_{52} \oplus k_{73}k_{72}k_{52} \oplus \\
& k_{63}k_{52} \oplus k_{78}k_{62}k_{52} \oplus k_{77}k_{76}k_{62}k_{52} \oplus k_{62}k_{61}k_{52} \oplus k_{53}k_{52} \oplus k_{77}k_{53}k_{52} \oplus \\
& k_{76}k_{53}k_{52} \oplus k_{76}k_{75}k_{53}k_{52} \oplus k_{74}k_{53}k_{52} \oplus k_{75}k_{74}k_{53}k_{52} \oplus k_{73}k_{72}k_{53}k_{52} \oplus \\
& k_{77}k_{51} \oplus k_{77}k_{76}k_{51} \oplus k_{74}k_{51} \oplus k_{77}k_{75}k_{74}k_{51} \oplus k_{76}k_{75}k_{74}k_{51} \oplus k_{73}k_{72}k_{51} \oplus \\
& k_{79}k_{62}k_{51} \oplus k_{78}k_{77}k_{62}k_{51} \oplus k_{60}k_{59}k_{51} \oplus k_{63}k_{58}k_{51} \oplus k_{62}k_{61}k_{58}k_{51} \oplus \\
& k_{52}k_{51} \oplus k_{74}k_{52}k_{51} \oplus k_{73}k_{72}k_{52}k_{51} \oplus k_{71}k_{52}k_{51} \oplus k_{74}k_{71}k_{52}k_{51} \oplus \\
& k_{73}k_{72}k_{71}k_{52}k_{51} \oplus k_{70}k_{69}k_{52}k_{51} \oplus k_{74}k_{70}k_{69}k_{52}k_{51} \oplus k_{73}k_{72}k_{70}k_{69}k_{52}k_{51} \oplus \\
& k_{62}k_{52}k_{51} \oplus k_{59}k_{52}k_{51} \oplus k_{74}k_{59}k_{52}k_{51} \oplus k_{73}k_{72}k_{59}k_{52}k_{51} \oplus k_{58}k_{52}k_{51} \oplus \\
& k_{74}k_{58}k_{52}k_{51} \oplus k_{73}k_{72}k_{58}k_{52}k_{51} \oplus k_{58}k_{57}k_{52}k_{51} \oplus k_{74}k_{58}k_{57}k_{52}k_{51} \oplus \\
& k_{73}k_{72}k_{58}k_{57}k_{52}k_{51} \oplus k_{50} \oplus k_{79}k_{50} \oplus k_{78}k_{50} \oplus k_{78}k_{77}k_{50} \oplus k_{79}k_{78}k_{77}k_{50} \oplus \\
& k_{76}k_{50} \oplus k_{78}k_{76}k_{50} \oplus k_{74}k_{50} \oplus k_{75}k_{74}k_{50} \oplus k_{78}k_{75}k_{74}k_{50} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{77}k_{76}k_{75}k_{74}k_{50} \oplus k_{73}k_{50} \oplus k_{73}k_{72}k_{50} \oplus k_{72}k_{71}k_{50} \oplus k_{74}k_{64}k_{50} \oplus \\
& k_{73}k_{72}k_{64}k_{50} \oplus k_{62}k_{50} \oplus k_{76}k_{62}k_{50} \oplus k_{75}k_{62}k_{50} \oplus k_{75}k_{74}k_{62}k_{50} \oplus \\
& k_{74}k_{73}k_{62}k_{50} \oplus k_{74}k_{63}k_{62}k_{50} \oplus k_{73}k_{72}k_{63}k_{62}k_{50} \oplus k_{61}k_{50} \oplus k_{62}k_{61}k_{50} \oplus \\
& k_{61}k_{60}k_{50} \oplus k_{75}k_{61}k_{60}k_{50} \oplus k_{74}k_{73}k_{61}k_{60}k_{50} \oplus k_{60}k_{59}k_{50} \oplus k_{62}k_{60}k_{59}k_{50} \oplus \\
& k_{61}k_{60}k_{59}k_{50} \oplus k_{62}k_{58}k_{50} \oplus k_{61}k_{58}k_{50} \oplus k_{61}k_{60}k_{58}k_{50} \oplus k_{60}k_{59}k_{58}k_{50} \oplus \\
& k_{54}k_{50} \oplus k_{53}k_{50} \oplus k_{79}k_{53}k_{50} \oplus k_{78}k_{77}k_{53}k_{50} \oplus k_{52}k_{50} \oplus k_{79}k_{78}k_{52}k_{50} \oplus \\
& k_{53}k_{52}k_{50} \oplus k_{51}k_{50} \oplus k_{76}k_{51}k_{50} \oplus k_{75}k_{74}k_{51}k_{50} \oplus k_{79}k_{49} \oplus k_{79}k_{78}k_{49} \oplus \\
& k_{79}k_{78}k_{77}k_{49} \oplus k_{77}k_{76}k_{49} \oplus k_{75}k_{49} \oplus k_{78}k_{76}k_{75}k_{49} \oplus k_{77}k_{76}k_{75}k_{49} \oplus \\
& k_{74}k_{73}k_{49} \oplus k_{63}k_{49} \oplus k_{62}k_{49} \oplus k_{77}k_{62}k_{49} \oplus k_{75}k_{62}k_{49} \oplus k_{76}k_{75}k_{62}k_{49} \oplus \\
& k_{74}k_{73}k_{62}k_{49} \oplus k_{62}k_{61}k_{49} \oplus k_{61}k_{60}k_{49} \oplus k_{75}k_{61}k_{60}k_{49} \oplus k_{74}k_{73}k_{61}k_{60}k_{49} \oplus \\
& k_{58}k_{49} \oplus k_{75}k_{58}k_{49} \oplus k_{74}k_{73}k_{58}k_{49} \oplus k_{62}k_{58}k_{49} \oplus k_{75}k_{62}k_{58}k_{49} \oplus \\
& k_{74}k_{73}k_{62}k_{58}k_{49} \oplus k_{61}k_{58}k_{49} \oplus k_{75}k_{61}k_{58}k_{49} \oplus k_{74}k_{73}k_{61}k_{58}k_{49} \oplus \\
& k_{61}k_{60}k_{58}k_{49} \oplus k_{75}k_{61}k_{60}k_{58}k_{49} \oplus k_{74}k_{73}k_{61}k_{60}k_{58}k_{49} \oplus k_{60}k_{59}k_{58}k_{49} \oplus \\
& k_{75}k_{60}k_{59}k_{58}k_{49} \oplus k_{74}k_{73}k_{60}k_{59}k_{58}k_{49} \oplus k_{75}k_{54}k_{49} \oplus k_{74}k_{73}k_{54}k_{49} \oplus \\
& k_{62}k_{54}k_{49} \oplus k_{61}k_{60}k_{54}k_{49} \oplus k_{79}k_{53}k_{49} \oplus k_{78}k_{77}k_{53}k_{49} \oplus k_{52}k_{49} \oplus \\
& k_{79}k_{78}k_{52}k_{49} \oplus k_{53}k_{52}k_{49} \oplus k_{77}k_{51}k_{49} \oplus k_{76}k_{75}k_{51}k_{49} \oplus k_{78}k_{50}k_{49} \oplus \\
& k_{77}k_{76}k_{50}k_{49} \oplus k_{62}k_{50}k_{49} \oplus k_{51}k_{50}k_{49} \oplus k_{48} \oplus k_{79}k_{78}k_{48} \oplus k_{77}k_{48} \oplus \\
& k_{76}k_{75}k_{48} \oplus k_{74}k_{48} \oplus k_{73}k_{72}k_{48} \oplus k_{71}k_{48} \oplus k_{79}k_{78}k_{71}k_{48} \oplus \\
& k_{79}k_{78}k_{74}k_{71}k_{48} \oplus k_{73}k_{71}k_{48} \oplus k_{72}k_{71}k_{48} \oplus k_{79}k_{78}k_{73}k_{72}k_{71}k_{48} \oplus \\
& k_{70}k_{69}k_{48} \oplus k_{79}k_{78}k_{70}k_{69}k_{48} \oplus k_{79}k_{78}k_{74}k_{70}k_{69}k_{48} \oplus k_{73}k_{70}k_{69}k_{48} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{48} \oplus k_{72}k_{71}k_{70}k_{69}k_{48} \oplus k_{63}k_{48} \oplus k_{62}k_{48} \oplus k_{77}k_{62}k_{48} \oplus \\
& k_{76}k_{62}k_{48} \oplus k_{76}k_{75}k_{62}k_{48} \oplus k_{75}k_{74}k_{62}k_{48} \oplus k_{62}k_{61}k_{48} \oplus k_{61}k_{60}k_{48} \oplus \\
& k_{77}k_{61}k_{60}k_{48} \oplus k_{76}k_{61}k_{60}k_{48} \oplus k_{76}k_{75}k_{61}k_{60}k_{48} \oplus k_{75}k_{74}k_{61}k_{60}k_{48} \oplus \\
& k_{59}k_{48} \oplus k_{79}k_{78}k_{59}k_{48} \oplus k_{79}k_{78}k_{74}k_{59}k_{48} \oplus k_{73}k_{59}k_{48} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{59}k_{48} \oplus k_{72}k_{71}k_{59}k_{48} \oplus k_{58}k_{48} \oplus k_{79}k_{78}k_{58}k_{48} \oplus k_{76}k_{58}k_{48} \oplus \\
& k_{79}k_{78}k_{74}k_{58}k_{48} \oplus k_{75}k_{74}k_{58}k_{48} \oplus k_{73}k_{58}k_{48} \oplus k_{72}k_{58}k_{48} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{58}k_{48} \oplus k_{72}k_{71}k_{58}k_{48} \oplus k_{71}k_{70}k_{58}k_{48} \oplus k_{62}k_{58}k_{48} \oplus \\
& k_{76}k_{62}k_{58}k_{48} \oplus k_{75}k_{74}k_{62}k_{58}k_{48} \oplus k_{76}k_{61}k_{58}k_{48} \oplus k_{75}k_{74}k_{61}k_{58}k_{48} \oplus \\
& k_{61}k_{60}k_{58}k_{48} \oplus k_{76}k_{61}k_{60}k_{58}k_{48} \oplus k_{75}k_{74}k_{61}k_{60}k_{58}k_{48} \oplus k_{76}k_{60}k_{59}k_{58}k_{48} \oplus \\
& k_{75}k_{74}k_{60}k_{59}k_{58}k_{48} \oplus k_{58}k_{57}k_{48} \oplus k_{79}k_{78}k_{58}k_{57}k_{48} \oplus k_{79}k_{78}k_{74}k_{58}k_{57}k_{48} \oplus \\
& k_{73}k_{58}k_{57}k_{48} \oplus k_{79}k_{78}k_{73}k_{72}k_{58}k_{57}k_{48} \oplus k_{72}k_{71}k_{58}k_{57}k_{48} \oplus k_{54}k_{48} \oplus \\
& k_{76}k_{54}k_{48} \oplus k_{74}k_{54}k_{48} \oplus k_{75}k_{74}k_{54}k_{48} \oplus k_{73}k_{72}k_{54}k_{48} \oplus k_{71}k_{54}k_{48} \oplus \\
& k_{70}k_{69}k_{54}k_{48} \oplus k_{59}k_{54}k_{48} \oplus k_{58}k_{54}k_{48} \oplus k_{58}k_{57}k_{54}k_{48} \oplus k_{53}k_{48} \oplus \\
& k_{71}k_{53}k_{48} \oplus k_{74}k_{71}k_{53}k_{48} \oplus k_{73}k_{72}k_{71}k_{53}k_{48} \oplus k_{70}k_{69}k_{53}k_{48} \oplus \\
& k_{74}k_{70}k_{69}k_{53}k_{48} \oplus k_{73}k_{72}k_{70}k_{69}k_{53}k_{48} \oplus k_{59}k_{53}k_{48} \oplus k_{74}k_{59}k_{53}k_{48} \oplus \\
& k_{73}k_{72}k_{59}k_{53}k_{48} \oplus k_{58}k_{53}k_{48} \oplus k_{74}k_{58}k_{53}k_{48} \oplus k_{73}k_{72}k_{58}k_{53}k_{48} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{58}k_{57}k_{53}k_{48} \oplus k_{74}k_{58}k_{57}k_{53}k_{48} \oplus k_{73}k_{72}k_{58}k_{57}k_{53}k_{48} \oplus k_{50}k_{48} \oplus \\
& k_{62}k_{50}k_{48} \oplus k_{61}k_{60}k_{50}k_{48} \oplus k_{49}k_{48} \oplus k_{76}k_{49}k_{48} \oplus k_{75}k_{49}k_{48} \oplus k_{74}k_{49}k_{48} \oplus \\
& k_{75}k_{74}k_{49}k_{48} \oplus k_{73}k_{49}k_{48} \oplus k_{74}k_{73}k_{49}k_{48} \oplus k_{73}k_{72}k_{49}k_{48} \oplus k_{72}k_{71}k_{49}k_{48} \oplus \\
& k_{74}k_{64}k_{49}k_{48} \oplus k_{73}k_{72}k_{64}k_{49}k_{48} \oplus k_{74}k_{63}k_{62}k_{49}k_{48} \oplus k_{73}k_{72}k_{63}k_{62}k_{49}k_{48} \oplus \\
& k_{62}k_{61}k_{49}k_{48} \oplus k_{62}k_{60}k_{59}k_{49}k_{48} \oplus k_{61}k_{60}k_{59}k_{49}k_{48} \oplus k_{58}k_{49}k_{48} \oplus \\
& k_{62}k_{58}k_{49}k_{48} \oplus k_{61}k_{58}k_{49}k_{48} \oplus k_{61}k_{60}k_{58}k_{49}k_{48} \oplus k_{60}k_{59}k_{58}k_{49}k_{48} \oplus \\
& k_{54}k_{49}k_{48} \oplus k_{74}k_{51}k_{49}k_{48} \oplus k_{73}k_{72}k_{51}k_{49}k_{48} \oplus k_{74}k_{50}k_{49}k_{48} \oplus \\
& k_{73}k_{72}k_{50}k_{49}k_{48} \oplus k_{75}k_{47} \oplus k_{73}k_{47} \oplus k_{79}k_{78}k_{73}k_{47} \oplus k_{74}k_{73}k_{47} \oplus k_{72}k_{47} \oplus \\
& k_{73}k_{71}k_{47} \oplus k_{79}k_{78}k_{72}k_{71}k_{47} \oplus k_{71}k_{70}k_{47} \oplus k_{69}k_{47} \oplus k_{73}k_{70}k_{69}k_{47} \oplus \\
& k_{72}k_{71}k_{70}k_{69}k_{47} \oplus k_{68}k_{47} \oplus k_{71}k_{68}k_{47} \oplus k_{70}k_{69}k_{68}k_{47} \oplus k_{67}k_{47} \oplus \\
& k_{71}k_{67}k_{47} \oplus k_{70}k_{69}k_{67}k_{47} \oplus k_{67}k_{66}k_{47} \oplus k_{68}k_{66}k_{65}k_{47} \oplus k_{67}k_{66}k_{65}k_{47} \oplus \\
& k_{67}k_{65}k_{64}k_{47} \oplus k_{71}k_{67}k_{65}k_{64}k_{47} \oplus k_{70}k_{69}k_{67}k_{65}k_{64}k_{47} \oplus k_{66}k_{65}k_{64}k_{47} \oplus \\
& k_{71}k_{66}k_{65}k_{64}k_{47} \oplus k_{70}k_{69}k_{66}k_{65}k_{64}k_{47} \oplus k_{79}k_{78}k_{71}k_{63}k_{47} \oplus \\
& k_{79}k_{78}k_{70}k_{69}k_{63}k_{47} \oplus k_{62}k_{47} \oplus k_{79}k_{78}k_{62}k_{47} \oplus k_{71}k_{62}k_{47} \oplus k_{70}k_{69}k_{62}k_{47} \oplus \\
& k_{71}k_{61}k_{47} \oplus k_{79}k_{78}k_{71}k_{61}k_{47} \oplus k_{70}k_{69}k_{61}k_{47} \oplus k_{79}k_{78}k_{70}k_{69}k_{61}k_{47} \oplus \\
& k_{61}k_{60}k_{47} \oplus k_{79}k_{78}k_{61}k_{60}k_{47} \oplus k_{71}k_{61}k_{60}k_{47} \oplus k_{79}k_{78}k_{71}k_{61}k_{60}k_{47} \oplus \\
& k_{70}k_{69}k_{61}k_{60}k_{47} \oplus k_{79}k_{78}k_{70}k_{69}k_{61}k_{60}k_{47} \oplus k_{59}k_{47} \oplus k_{73}k_{59}k_{47} \oplus \\
& k_{72}k_{71}k_{59}k_{47} \oplus k_{68}k_{59}k_{47} \oplus k_{67}k_{59}k_{47} \oplus k_{67}k_{65}k_{64}k_{59}k_{47} \oplus \\
& k_{66}k_{65}k_{64}k_{59}k_{47} \oplus k_{79}k_{78}k_{63}k_{59}k_{47} \oplus k_{62}k_{59}k_{47} \oplus k_{61}k_{59}k_{47} \oplus \\
& k_{79}k_{78}k_{61}k_{59}k_{47} \oplus k_{60}k_{59}k_{47} \oplus k_{79}k_{78}k_{60}k_{59}k_{47} \oplus k_{71}k_{60}k_{59}k_{47} \oplus \\
& k_{70}k_{69}k_{60}k_{59}k_{47} \oplus k_{79}k_{78}k_{62}k_{60}k_{59}k_{47} \oplus k_{79}k_{78}k_{71}k_{62}k_{60}k_{59}k_{47} \oplus \\
& k_{79}k_{78}k_{70}k_{69}k_{62}k_{60}k_{59}k_{47} \oplus k_{61}k_{60}k_{59}k_{47} \oplus k_{79}k_{78}k_{71}k_{61}k_{60}k_{59}k_{47} \oplus \\
& k_{79}k_{78}k_{70}k_{69}k_{61}k_{60}k_{59}k_{47} \oplus k_{58}k_{47} \oplus k_{73}k_{58}k_{47} \oplus k_{72}k_{71}k_{58}k_{47} \oplus \\
& k_{68}k_{58}k_{47} \oplus k_{67}k_{58}k_{47} \oplus k_{67}k_{65}k_{64}k_{58}k_{47} \oplus k_{66}k_{65}k_{64}k_{58}k_{47} \oplus \\
& k_{79}k_{78}k_{63}k_{58}k_{47} \oplus k_{62}k_{58}k_{47} \oplus k_{61}k_{58}k_{47} \oplus k_{79}k_{78}k_{61}k_{58}k_{47} \oplus \\
& k_{61}k_{60}k_{58}k_{47} \oplus k_{79}k_{78}k_{61}k_{60}k_{58}k_{47} \oplus k_{60}k_{59}k_{58}k_{47} \oplus \\
& k_{79}k_{78}k_{62}k_{60}k_{59}k_{58}k_{47} \oplus k_{79}k_{78}k_{61}k_{60}k_{59}k_{58}k_{47} \oplus k_{58}k_{57}k_{47} \oplus \\
& k_{73}k_{58}k_{57}k_{47} \oplus k_{72}k_{71}k_{58}k_{57}k_{47} \oplus k_{68}k_{58}k_{57}k_{47} \oplus k_{67}k_{58}k_{57}k_{47} \oplus \\
& k_{67}k_{65}k_{64}k_{58}k_{57}k_{47} \oplus k_{66}k_{65}k_{64}k_{58}k_{57}k_{47} \oplus k_{79}k_{78}k_{63}k_{58}k_{57}k_{47} \oplus \\
& k_{62}k_{58}k_{57}k_{47} \oplus k_{61}k_{58}k_{57}k_{47} \oplus k_{79}k_{78}k_{61}k_{58}k_{57}k_{47} \oplus k_{61}k_{60}k_{58}k_{57}k_{47} \oplus \\
& k_{79}k_{78}k_{61}k_{60}k_{58}k_{57}k_{47} \oplus k_{60}k_{59}k_{58}k_{57}k_{47} \oplus k_{79}k_{78}k_{62}k_{60}k_{59}k_{58}k_{57}k_{47} \oplus \\
& k_{79}k_{78}k_{61}k_{60}k_{59}k_{58}k_{57}k_{47} \oplus k_{56}k_{47} \oplus k_{79}k_{78}k_{55}k_{47} \oplus k_{79}k_{78}k_{71}k_{55}k_{47} \oplus \\
& k_{79}k_{78}k_{70}k_{69}k_{55}k_{47} \oplus k_{79}k_{78}k_{59}k_{55}k_{47} \oplus k_{79}k_{78}k_{58}k_{55}k_{47} \oplus \\
& k_{79}k_{78}k_{58}k_{57}k_{55}k_{47} \oplus k_{63}k_{54}k_{47} \oplus k_{71}k_{62}k_{54}k_{47} \oplus k_{70}k_{69}k_{62}k_{54}k_{47} \oplus \\
& k_{71}k_{61}k_{54}k_{47} \oplus k_{70}k_{69}k_{61}k_{54}k_{47} \oplus k_{61}k_{60}k_{54}k_{47} \oplus k_{71}k_{61}k_{60}k_{54}k_{47} \oplus \\
& k_{70}k_{69}k_{61}k_{60}k_{54}k_{47} \oplus k_{62}k_{59}k_{54}k_{47} \oplus k_{61}k_{59}k_{54}k_{47} \oplus k_{60}k_{59}k_{54}k_{47} \oplus
\end{aligned}$$



$$\begin{aligned}
& k_{71}k_{60}k_{59}k_{54}k_{47} \oplus k_{70}k_{69}k_{60}k_{59}k_{54}k_{47} \oplus k_{62}k_{60}k_{59}k_{54}k_{47} \oplus k_{62}k_{58}k_{54}k_{47} \oplus \\
& k_{61}k_{58}k_{54}k_{47} \oplus k_{61}k_{60}k_{58}k_{54}k_{47} \oplus k_{60}k_{59}k_{58}k_{54}k_{47} \oplus k_{62}k_{58}k_{57}k_{54}k_{47} \oplus \\
& k_{61}k_{58}k_{57}k_{54}k_{47} \oplus k_{61}k_{60}k_{58}k_{57}k_{54}k_{47} \oplus k_{60}k_{59}k_{58}k_{57}k_{54}k_{47} \oplus k_{53}k_{47} \oplus \\
& k_{73}k_{53}k_{47} \oplus k_{71}k_{53}k_{47} \oplus k_{72}k_{71}k_{53}k_{47} \oplus k_{70}k_{69}k_{53}k_{47} \oplus k_{71}k_{63}k_{53}k_{47} \oplus \\
& k_{70}k_{69}k_{63}k_{53}k_{47} \oplus k_{62}k_{53}k_{47} \oplus k_{71}k_{61}k_{53}k_{47} \oplus k_{70}k_{69}k_{61}k_{53}k_{47} \oplus \\
& k_{61}k_{60}k_{53}k_{47} \oplus k_{71}k_{61}k_{60}k_{53}k_{47} \oplus k_{70}k_{69}k_{61}k_{60}k_{53}k_{47} \oplus k_{59}k_{53}k_{47} \oplus \\
& k_{63}k_{59}k_{53}k_{47} \oplus k_{61}k_{59}k_{53}k_{47} \oplus k_{60}k_{59}k_{53}k_{47} \oplus k_{62}k_{60}k_{59}k_{53}k_{47} \oplus \\
& k_{71}k_{62}k_{60}k_{59}k_{53}k_{47} \oplus k_{70}k_{69}k_{62}k_{60}k_{59}k_{53}k_{47} \oplus k_{71}k_{61}k_{60}k_{59}k_{53}k_{47} \oplus \\
& k_{70}k_{69}k_{61}k_{60}k_{59}k_{53}k_{47} \oplus k_{58}k_{53}k_{47} \oplus k_{63}k_{58}k_{53}k_{47} \oplus k_{61}k_{58}k_{53}k_{47} \oplus \\
& k_{61}k_{60}k_{58}k_{53}k_{47} \oplus k_{62}k_{60}k_{59}k_{58}k_{53}k_{47} \oplus k_{61}k_{60}k_{59}k_{58}k_{53}k_{47} \oplus \\
& k_{58}k_{57}k_{53}k_{47} \oplus k_{63}k_{58}k_{57}k_{53}k_{47} \oplus k_{61}k_{58}k_{57}k_{53}k_{47} \oplus k_{61}k_{60}k_{58}k_{57}k_{53}k_{47} \oplus \\
& k_{62}k_{60}k_{59}k_{58}k_{57}k_{53}k_{47} \oplus k_{61}k_{60}k_{59}k_{58}k_{57}k_{53}k_{47} \oplus k_{55}k_{53}k_{47} \oplus \\
& k_{71}k_{55}k_{53}k_{47} \oplus k_{70}k_{69}k_{55}k_{53}k_{47} \oplus k_{59}k_{55}k_{53}k_{47} \oplus k_{58}k_{55}k_{53}k_{47} \oplus \\
& k_{58}k_{57}k_{55}k_{53}k_{47} \oplus k_{52}k_{47} \oplus k_{53}k_{52}k_{47} \oplus k_{51}k_{47} \oplus k_{52}k_{51}k_{47} \oplus \\
& k_{71}k_{52}k_{51}k_{47} \oplus k_{70}k_{69}k_{52}k_{51}k_{47} \oplus k_{59}k_{52}k_{51}k_{47} \oplus k_{58}k_{52}k_{51}k_{47} \oplus \\
& k_{58}k_{57}k_{52}k_{51}k_{47} \oplus k_{50}k_{47} \oplus k_{64}k_{50}k_{47} \oplus k_{63}k_{62}k_{50}k_{47} \oplus k_{75}k_{48}k_{47} \oplus \\
& k_{74}k_{73}k_{48}k_{47} \oplus k_{79}k_{78}k_{71}k_{48}k_{47} \oplus k_{79}k_{78}k_{70}k_{69}k_{48}k_{47} \oplus k_{79}k_{78}k_{59}k_{48}k_{47} \oplus \\
& k_{79}k_{78}k_{58}k_{48}k_{47} \oplus k_{79}k_{78}k_{58}k_{57}k_{48}k_{47} \oplus k_{54}k_{48}k_{47} \oplus k_{71}k_{53}k_{48}k_{47} \oplus \\
& k_{70}k_{69}k_{53}k_{48}k_{47} \oplus k_{59}k_{53}k_{48}k_{47} \oplus k_{58}k_{53}k_{48}k_{47} \oplus k_{58}k_{57}k_{53}k_{48}k_{47} \oplus \\
& k_{61}k_{50}k_{48}k_{47} \oplus k_{60}k_{59}k_{50}k_{48}k_{47} \oplus k_{49}k_{48}k_{47} \oplus k_{64}k_{49}k_{48}k_{47} \oplus \\
& k_{63}k_{62}k_{49}k_{48}k_{47} \oplus k_{61}k_{49}k_{48}k_{47} \oplus k_{60}k_{59}k_{49}k_{48}k_{47} \oplus k_{51}k_{49}k_{48}k_{47} \oplus \\
& k_{50}k_{49}k_{48}k_{47} \oplus k_{79}k_{78}k_{46} \oplus k_{74}k_{46} \oplus k_{79}k_{78}k_{74}k_{46} \oplus k_{72}k_{46} \oplus k_{73}k_{72}k_{46} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{46} \oplus k_{79}k_{78}k_{71}k_{46} \oplus k_{74}k_{71}k_{46} \oplus k_{73}k_{72}k_{71}k_{46} \oplus k_{71}k_{70}k_{46} \oplus \\
& k_{69}k_{46} \oplus k_{79}k_{78}k_{70}k_{69}k_{46} \oplus k_{74}k_{70}k_{69}k_{46} \oplus k_{73}k_{72}k_{70}k_{69}k_{46} \oplus k_{68}k_{67}k_{46} \oplus \\
& k_{63}k_{46} \oplus k_{71}k_{63}k_{46} \oplus k_{70}k_{69}k_{63}k_{46} \oplus k_{79}k_{78}k_{62}k_{46} \oplus k_{79}k_{78}k_{61}k_{46} \oplus \\
& k_{60}k_{46} \oplus k_{61}k_{60}k_{46} \oplus k_{79}k_{78}k_{61}k_{60}k_{46} \oplus k_{71}k_{61}k_{60}k_{46} \oplus k_{70}k_{69}k_{61}k_{60}k_{46} \oplus \\
& k_{79}k_{78}k_{59}k_{46} \oplus k_{74}k_{59}k_{46} \oplus k_{73}k_{72}k_{59}k_{46} \oplus k_{63}k_{59}k_{46} \oplus k_{79}k_{78}k_{60}k_{59}k_{46} \oplus \\
& k_{71}k_{62}k_{60}k_{59}k_{46} \oplus k_{70}k_{69}k_{62}k_{60}k_{59}k_{46} \oplus k_{61}k_{60}k_{59}k_{46} \oplus k_{71}k_{61}k_{60}k_{59}k_{46} \oplus \\
& k_{70}k_{69}k_{61}k_{60}k_{59}k_{46} \oplus k_{79}k_{78}k_{58}k_{46} \oplus k_{74}k_{58}k_{46} \oplus k_{73}k_{72}k_{58}k_{46} \oplus \\
& k_{63}k_{58}k_{46} \oplus k_{62}k_{58}k_{46} \oplus k_{61}k_{58}k_{46} \oplus k_{59}k_{58}k_{46} \oplus k_{60}k_{59}k_{58}k_{46} \oplus \\
& k_{62}k_{60}k_{59}k_{58}k_{46} \oplus k_{61}k_{60}k_{59}k_{58}k_{46} \oplus k_{57}k_{46} \oplus k_{79}k_{78}k_{58}k_{57}k_{46} \oplus \\
& k_{74}k_{58}k_{57}k_{46} \oplus k_{73}k_{72}k_{58}k_{57}k_{46} \oplus k_{63}k_{58}k_{57}k_{46} \oplus k_{61}k_{60}k_{58}k_{57}k_{46} \oplus \\
& k_{62}k_{60}k_{59}k_{58}k_{57}k_{46} \oplus k_{61}k_{60}k_{59}k_{58}k_{57}k_{46} \oplus k_{56}k_{46} \oplus k_{55}k_{46} \oplus k_{56}k_{55}k_{46} \oplus \\
& k_{71}k_{54}k_{46} \oplus k_{70}k_{69}k_{54}k_{46} \oplus k_{59}k_{54}k_{46} \oplus k_{58}k_{54}k_{46} \oplus k_{58}k_{57}k_{54}k_{46} \oplus \\
& k_{53}k_{46} \oplus k_{74}k_{53}k_{46} \oplus k_{73}k_{72}k_{53}k_{46} \oplus k_{71}k_{53}k_{46} \oplus k_{70}k_{69}k_{53}k_{46} \oplus \\
& k_{62}k_{53}k_{46} \oplus k_{61}k_{53}k_{46} \oplus k_{61}k_{60}k_{53}k_{46} \oplus k_{59}k_{53}k_{46} \oplus k_{60}k_{59}k_{53}k_{46} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{58}k_{53}k_{46} \oplus k_{58}k_{57}k_{53}k_{46} \oplus k_{50}k_{46} \oplus k_{71}k_{48}k_{46} \oplus k_{70}k_{69}k_{48}k_{46} \oplus \\
& k_{59}k_{48}k_{46} \oplus k_{58}k_{48}k_{46} \oplus k_{58}k_{57}k_{48}k_{46} \oplus k_{49}k_{48}k_{46} \oplus k_{79}k_{78}k_{47}k_{46} \oplus \\
& k_{73}k_{47}k_{46} \oplus k_{72}k_{47}k_{46} \oplus k_{79}k_{78}k_{74}k_{71}k_{47}k_{46} \oplus k_{73}k_{71}k_{47}k_{46} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{71}k_{47}k_{46} \oplus k_{71}k_{70}k_{47}k_{46} \oplus k_{79}k_{78}k_{74}k_{70}k_{69}k_{47}k_{46} \oplus \\
& k_{73}k_{70}k_{69}k_{47}k_{46} \oplus k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{47}k_{46} \oplus k_{72}k_{71}k_{70}k_{69}k_{47}k_{46} \oplus \\
& k_{79}k_{78}k_{74}k_{59}k_{47}k_{46} \oplus k_{73}k_{59}k_{47}k_{46} \oplus k_{79}k_{78}k_{73}k_{72}k_{59}k_{47}k_{46} \oplus \\
& k_{72}k_{71}k_{59}k_{47}k_{46} \oplus k_{58}k_{47}k_{46} \oplus k_{79}k_{78}k_{74}k_{58}k_{47}k_{46} \oplus k_{73}k_{58}k_{47}k_{46} \oplus \\
& k_{72}k_{58}k_{47}k_{46} \oplus k_{79}k_{78}k_{73}k_{72}k_{58}k_{47}k_{46} \oplus k_{72}k_{71}k_{58}k_{47}k_{46} \oplus \\
& k_{71}k_{70}k_{58}k_{47}k_{46} \oplus k_{79}k_{78}k_{74}k_{58}k_{57}k_{47}k_{46} \oplus k_{73}k_{58}k_{57}k_{47}k_{46} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{58}k_{57}k_{47}k_{46} \oplus k_{72}k_{71}k_{58}k_{57}k_{47}k_{46} \oplus k_{54}k_{47}k_{46} \oplus \\
& k_{74}k_{54}k_{47}k_{46} \oplus k_{73}k_{72}k_{54}k_{47}k_{46} \oplus k_{71}k_{54}k_{47}k_{46} \oplus k_{70}k_{69}k_{54}k_{47}k_{46} \oplus \\
& k_{59}k_{54}k_{47}k_{46} \oplus k_{58}k_{54}k_{47}k_{46} \oplus k_{58}k_{57}k_{54}k_{47}k_{46} \oplus k_{53}k_{47}k_{46} \oplus \\
& k_{74}k_{71}k_{53}k_{47}k_{46} \oplus k_{73}k_{72}k_{71}k_{53}k_{47}k_{46} \oplus k_{74}k_{70}k_{69}k_{53}k_{47}k_{46} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{53}k_{47}k_{46} \oplus k_{74}k_{59}k_{53}k_{47}k_{46} \oplus k_{73}k_{72}k_{59}k_{53}k_{47}k_{46} \oplus \\
& k_{74}k_{58}k_{53}k_{47}k_{46} \oplus k_{73}k_{72}k_{58}k_{53}k_{47}k_{46} \oplus k_{74}k_{58}k_{57}k_{53}k_{47}k_{46} \oplus \\
& k_{73}k_{72}k_{58}k_{57}k_{53}k_{47}k_{46} \oplus k_{50}k_{47}k_{46} \oplus k_{49}k_{48}k_{47}k_{46} \oplus k_{45} \oplus k_{75}k_{45} \oplus \\
& k_{74}k_{45} \oplus k_{73}k_{45} \oplus k_{74}k_{73}k_{45} \oplus k_{73}k_{72}k_{45} \oplus k_{71}k_{45} \oplus k_{72}k_{71}k_{45} \oplus \\
& k_{70}k_{69}k_{45} \oplus k_{63}k_{45} \oplus k_{71}k_{62}k_{45} \oplus k_{70}k_{69}k_{62}k_{45} \oplus k_{71}k_{61}k_{45} \oplus \\
& k_{70}k_{69}k_{61}k_{45} \oplus k_{60}k_{45} \oplus k_{61}k_{60}k_{45} \oplus k_{71}k_{61}k_{60}k_{45} \oplus k_{70}k_{69}k_{61}k_{60}k_{45} \oplus \\
& k_{59}k_{45} \oplus k_{62}k_{59}k_{45} \oplus k_{61}k_{59}k_{45} \oplus k_{60}k_{59}k_{45} \oplus k_{71}k_{60}k_{59}k_{45} \oplus \\
& k_{70}k_{69}k_{60}k_{59}k_{45} \oplus k_{62}k_{60}k_{59}k_{45} \oplus k_{58}k_{45} \oplus k_{63}k_{58}k_{45} \oplus k_{62}k_{58}k_{45} \oplus \\
& k_{61}k_{58}k_{45} \oplus k_{59}k_{58}k_{45} \oplus k_{60}k_{59}k_{58}k_{45} \oplus k_{62}k_{60}k_{59}k_{58}k_{45} \oplus \\
& k_{61}k_{60}k_{59}k_{58}k_{45} \oplus k_{58}k_{57}k_{45} \oplus k_{62}k_{58}k_{57}k_{45} \oplus k_{61}k_{58}k_{57}k_{45} \oplus \\
& k_{61}k_{60}k_{58}k_{57}k_{45} \oplus k_{60}k_{59}k_{58}k_{57}k_{45} \oplus k_{58}k_{48}k_{45} \oplus k_{47}k_{45} \oplus k_{46}k_{45} \oplus \\
& k_{47}k_{46}k_{45} \oplus k_{58}k_{47}k_{46}k_{45} \oplus k_{44} \oplus k_{75}k_{44} \oplus k_{79}k_{78}k_{73}k_{44} \oplus k_{72}k_{44} \oplus \\
& k_{73}k_{72}k_{44} \oplus k_{79}k_{78}k_{72}k_{71}k_{44} \oplus k_{74}k_{72}k_{71}k_{44} \oplus k_{73}k_{72}k_{71}k_{44} \oplus k_{71}k_{70}k_{44} \oplus \\
& k_{68}k_{44} \oplus k_{74}k_{68}k_{44} \oplus k_{73}k_{72}k_{68}k_{44} \oplus k_{67}k_{44} \oplus k_{74}k_{67}k_{44} \oplus k_{73}k_{72}k_{67}k_{44} \oplus \\
& k_{67}k_{65}k_{64}k_{44} \oplus k_{74}k_{67}k_{65}k_{64}k_{44} \oplus k_{73}k_{72}k_{67}k_{65}k_{64}k_{44} \oplus k_{66}k_{65}k_{64}k_{44} \oplus \\
& k_{74}k_{66}k_{65}k_{64}k_{44} \oplus k_{73}k_{72}k_{66}k_{65}k_{64}k_{44} \oplus k_{79}k_{78}k_{63}k_{44} \oplus k_{79}k_{78}k_{74}k_{63}k_{44} \oplus \\
& k_{73}k_{63}k_{44} \oplus k_{79}k_{78}k_{73}k_{72}k_{63}k_{44} \oplus k_{72}k_{71}k_{63}k_{44} \oplus k_{74}k_{62}k_{44} \oplus k_{72}k_{62}k_{44} \oplus \\
& k_{73}k_{72}k_{62}k_{44} \oplus k_{71}k_{70}k_{62}k_{44} \oplus k_{61}k_{44} \oplus k_{74}k_{61}k_{44} \oplus k_{79}k_{78}k_{74}k_{61}k_{44} \oplus \\
& k_{72}k_{61}k_{44} \oplus k_{73}k_{72}k_{61}k_{44} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{44} \oplus k_{71}k_{70}k_{61}k_{44} \oplus \\
& k_{62}k_{61}k_{44} \oplus k_{61}k_{60}k_{44} \oplus k_{79}k_{78}k_{61}k_{60}k_{44} \oplus k_{74}k_{61}k_{60}k_{44} \oplus \\
& k_{79}k_{78}k_{74}k_{61}k_{60}k_{44} \oplus k_{73}k_{61}k_{60}k_{44} \oplus k_{72}k_{61}k_{60}k_{44} \oplus k_{73}k_{72}k_{61}k_{60}k_{44} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{61}k_{60}k_{44} \oplus k_{72}k_{71}k_{61}k_{60}k_{44} \oplus k_{71}k_{70}k_{61}k_{60}k_{44} \oplus k_{59}k_{44} \oplus \\
& k_{60}k_{59}k_{44} \oplus k_{74}k_{60}k_{59}k_{44} \oplus k_{72}k_{60}k_{59}k_{44} \oplus k_{73}k_{72}k_{60}k_{59}k_{44} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{71}k_{70}k_{60}k_{59}k_{44} \oplus k_{79}k_{78}k_{62}k_{60}k_{59}k_{44} \oplus k_{79}k_{78}k_{74}k_{62}k_{60}k_{59}k_{44} \oplus \\
& k_{73}k_{62}k_{60}k_{59}k_{44} \oplus k_{79}k_{78}k_{73}k_{72}k_{62}k_{60}k_{59}k_{44} \oplus k_{72}k_{71}k_{62}k_{60}k_{59}k_{44} \oplus \\
& k_{61}k_{60}k_{59}k_{44} \oplus k_{79}k_{78}k_{61}k_{60}k_{59}k_{44} \oplus k_{79}k_{78}k_{74}k_{61}k_{60}k_{59}k_{44} \oplus \\
& k_{73}k_{61}k_{60}k_{59}k_{44} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{60}k_{59}k_{44} \oplus k_{72}k_{71}k_{61}k_{60}k_{59}k_{44} \oplus \\
& k_{58}k_{44} \oplus k_{59}k_{58}k_{44} \oplus k_{57}k_{44} \oplus k_{60}k_{57}k_{44} \oplus k_{58}k_{57}k_{44} \oplus k_{58}k_{56}k_{44} \oplus \\
& k_{55}k_{44} \oplus k_{79}k_{78}k_{74}k_{55}k_{44} \oplus k_{79}k_{78}k_{73}k_{72}k_{55}k_{44} \oplus k_{62}k_{55}k_{44} \oplus k_{61}k_{55}k_{44} \oplus \\
& k_{61}k_{60}k_{55}k_{44} \oplus k_{60}k_{59}k_{55}k_{44} \oplus k_{54}k_{44} \oplus k_{73}k_{54}k_{44} \oplus k_{72}k_{71}k_{54}k_{44} \oplus \\
& k_{63}k_{54}k_{44} \oplus k_{62}k_{54}k_{44} \oplus k_{74}k_{62}k_{54}k_{44} \oplus k_{73}k_{72}k_{62}k_{54}k_{44} \oplus k_{61}k_{54}k_{44} \oplus \\
& k_{74}k_{61}k_{54}k_{44} \oplus k_{73}k_{72}k_{61}k_{54}k_{44} \oplus k_{74}k_{61}k_{60}k_{54}k_{44} \oplus k_{73}k_{72}k_{61}k_{60}k_{54}k_{44} \oplus \\
& k_{60}k_{59}k_{54}k_{44} \oplus k_{74}k_{60}k_{59}k_{54}k_{44} \oplus k_{73}k_{72}k_{60}k_{59}k_{54}k_{44} \oplus k_{62}k_{60}k_{59}k_{54}k_{44} \oplus \\
& k_{61}k_{60}k_{59}k_{54}k_{44} \oplus k_{53}k_{44} \oplus k_{74}k_{53}k_{44} \oplus k_{73}k_{53}k_{44} \oplus k_{73}k_{72}k_{53}k_{44} \oplus \\
& k_{72}k_{71}k_{53}k_{44} \oplus k_{63}k_{53}k_{44} \oplus k_{74}k_{63}k_{53}k_{44} \oplus k_{73}k_{72}k_{63}k_{53}k_{44} \oplus \\
& k_{74}k_{61}k_{53}k_{44} \oplus k_{73}k_{72}k_{61}k_{53}k_{44} \oplus k_{61}k_{60}k_{53}k_{44} \oplus k_{74}k_{61}k_{60}k_{53}k_{44} \oplus \\
& k_{73}k_{72}k_{61}k_{60}k_{53}k_{44} \oplus k_{62}k_{60}k_{59}k_{53}k_{44} \oplus k_{74}k_{62}k_{60}k_{59}k_{53}k_{44} \oplus \\
& k_{73}k_{72}k_{62}k_{60}k_{59}k_{53}k_{44} \oplus k_{61}k_{60}k_{59}k_{53}k_{44} \oplus k_{74}k_{61}k_{60}k_{59}k_{53}k_{44} \oplus \\
& k_{73}k_{72}k_{61}k_{60}k_{59}k_{53}k_{44} \oplus k_{74}k_{55}k_{53}k_{44} \oplus k_{73}k_{72}k_{55}k_{53}k_{44} \oplus k_{52}k_{51}k_{44} \oplus \\
& k_{74}k_{52}k_{51}k_{44} \oplus k_{73}k_{72}k_{52}k_{51}k_{44} \oplus k_{48}k_{44} \oplus k_{79}k_{78}k_{48}k_{44} \oplus \\
& k_{79}k_{78}k_{74}k_{48}k_{44} \oplus k_{73}k_{48}k_{44} \oplus k_{79}k_{78}k_{73}k_{72}k_{48}k_{44} \oplus k_{72}k_{71}k_{48}k_{44} \oplus \\
& k_{56}k_{48}k_{44} \oplus k_{54}k_{48}k_{44} \oplus k_{53}k_{48}k_{44} \oplus k_{74}k_{53}k_{48}k_{44} \oplus k_{73}k_{72}k_{53}k_{48}k_{44} \oplus \\
& k_{73}k_{47}k_{44} \oplus k_{72}k_{71}k_{47}k_{44} \oplus k_{68}k_{47}k_{44} \oplus k_{67}k_{47}k_{44} \oplus k_{67}k_{65}k_{64}k_{47}k_{44} \oplus \\
& k_{66}k_{65}k_{64}k_{47}k_{44} \oplus k_{79}k_{78}k_{63}k_{47}k_{44} \oplus k_{62}k_{47}k_{44} \oplus k_{61}k_{47}k_{44} \oplus \\
& k_{79}k_{78}k_{61}k_{47}k_{44} \oplus k_{61}k_{60}k_{47}k_{44} \oplus k_{79}k_{78}k_{61}k_{60}k_{47}k_{44} \oplus k_{60}k_{59}k_{47}k_{44} \oplus \\
& k_{79}k_{78}k_{62}k_{60}k_{59}k_{47}k_{44} \oplus k_{79}k_{78}k_{61}k_{60}k_{59}k_{47}k_{44} \oplus k_{79}k_{78}k_{55}k_{47}k_{44} \oplus \\
& k_{62}k_{54}k_{47}k_{44} \oplus k_{61}k_{54}k_{47}k_{44} \oplus k_{61}k_{60}k_{54}k_{47}k_{44} \oplus k_{60}k_{59}k_{54}k_{47}k_{44} \oplus \\
& k_{53}k_{47}k_{44} \oplus k_{63}k_{53}k_{47}k_{44} \oplus k_{61}k_{53}k_{47}k_{44} \oplus k_{61}k_{60}k_{53}k_{47}k_{44} \oplus \\
& k_{62}k_{60}k_{59}k_{53}k_{47}k_{44} \oplus k_{61}k_{60}k_{59}k_{53}k_{47}k_{44} \oplus k_{55}k_{53}k_{47}k_{44} \oplus k_{52}k_{51}k_{47}k_{44} \oplus \\
& k_{79}k_{78}k_{48}k_{47}k_{44} \oplus k_{53}k_{48}k_{47}k_{44} \oplus k_{79}k_{78}k_{46}k_{44} \oplus k_{74}k_{46}k_{44} \oplus \\
& k_{73}k_{72}k_{46}k_{44} \oplus k_{63}k_{46}k_{44} \oplus k_{61}k_{60}k_{46}k_{44} \oplus k_{62}k_{60}k_{59}k_{46}k_{44} \oplus \\
& k_{61}k_{60}k_{59}k_{46}k_{44} \oplus k_{54}k_{46}k_{44} \oplus k_{53}k_{46}k_{44} \oplus k_{48}k_{46}k_{44} \oplus \\
& k_{79}k_{78}k_{74}k_{47}k_{46}k_{44} \oplus k_{73}k_{47}k_{46}k_{44} \oplus k_{79}k_{78}k_{73}k_{72}k_{47}k_{46}k_{44} \oplus \\
& k_{72}k_{71}k_{47}k_{46}k_{44} \oplus k_{54}k_{47}k_{46}k_{44} \oplus k_{74}k_{53}k_{47}k_{46}k_{44} \oplus k_{73}k_{72}k_{53}k_{47}k_{46}k_{44} \oplus \\
& k_{45}k_{44} \oplus k_{62}k_{45}k_{44} \oplus k_{61}k_{45}k_{44} \oplus k_{61}k_{60}k_{45}k_{44} \oplus k_{60}k_{59}k_{45}k_{44} \oplus k_{42} \oplus \\
& k_{78}k_{42} \oplus k_{77}k_{76}k_{42} \oplus k_{74}k_{42} \oplus k_{73}k_{42} \oplus k_{73}k_{72}k_{42} \oplus k_{72}k_{71}k_{42} \oplus k_{60}k_{42} \oplus \\
& k_{51}k_{42} \oplus k_{47}k_{42} \oplus k_{46}k_{42} \oplus k_{60}k_{43}k_{42} \oplus k_{58}k_{43}k_{42} \oplus k_{60}k_{57}k_{43}k_{42} \oplus \\
& k_{58}k_{56}k_{43}k_{42} \oplus k_{56}k_{48}k_{43}k_{42} \oplus k_{41} \oplus k_{74}k_{41} \oplus k_{73}k_{72}k_{41} \oplus k_{71}k_{41} \oplus \\
& k_{74}k_{71}k_{41} \oplus k_{73}k_{72}k_{71}k_{41} \oplus k_{70}k_{69}k_{41} \oplus k_{74}k_{70}k_{69}k_{41} \oplus k_{73}k_{72}k_{70}k_{69}k_{41} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{74}k_{67}k_{41} \oplus k_{73}k_{72}k_{67}k_{41} \oplus k_{74}k_{66}k_{65}k_{41} \oplus k_{73}k_{72}k_{66}k_{65}k_{41} \oplus k_{62}k_{41} \oplus \\
& k_{60}k_{41} \oplus k_{59}k_{41} \oplus k_{74}k_{59}k_{41} \oplus k_{73}k_{72}k_{59}k_{41} \oplus k_{74}k_{58}k_{41} \oplus k_{73}k_{72}k_{58}k_{41} \oplus \\
& k_{62}k_{58}k_{41} \oplus k_{61}k_{58}k_{41} \oplus k_{61}k_{60}k_{58}k_{41} \oplus k_{60}k_{59}k_{58}k_{41} \oplus k_{58}k_{57}k_{41} \oplus \\
& k_{74}k_{58}k_{57}k_{41} \oplus k_{73}k_{72}k_{58}k_{57}k_{41} \oplus k_{47}k_{41} \oplus k_{71}k_{47}k_{41} \oplus k_{70}k_{69}k_{47}k_{41} \oplus \\
& k_{67}k_{47}k_{41} \oplus k_{66}k_{65}k_{47}k_{41} \oplus k_{59}k_{47}k_{41} \oplus k_{58}k_{47}k_{41} \oplus k_{58}k_{57}k_{47}k_{41} \oplus \\
& k_{44}k_{41} \oplus k_{74}k_{44}k_{41} \oplus k_{73}k_{72}k_{44}k_{41} \oplus k_{47}k_{44}k_{41} \oplus k_{42}k_{41} \oplus k_{44}k_{42}k_{41} \oplus \\
& k_{74}k_{40} \oplus k_{73}k_{72}k_{40} \oplus k_{71}k_{40} \oplus k_{74}k_{71}k_{40} \oplus k_{73}k_{72}k_{71}k_{40} \oplus k_{70}k_{69}k_{40} \oplus \\
& k_{74}k_{70}k_{69}k_{40} \oplus k_{73}k_{72}k_{70}k_{69}k_{40} \oplus k_{74}k_{68}k_{40} \oplus k_{73}k_{72}k_{68}k_{40} \oplus k_{66}k_{40} \oplus \\
& k_{74}k_{66}k_{40} \oplus k_{73}k_{72}k_{66}k_{40} \oplus k_{71}k_{66}k_{40} \oplus k_{74}k_{71}k_{66}k_{40} \oplus k_{73}k_{72}k_{71}k_{66}k_{40} \oplus \\
& k_{70}k_{69}k_{66}k_{40} \oplus k_{74}k_{70}k_{69}k_{66}k_{40} \oplus k_{73}k_{72}k_{70}k_{69}k_{66}k_{40} \oplus k_{74}k_{67}k_{66}k_{40} \oplus \\
& k_{73}k_{72}k_{67}k_{66}k_{40} \oplus k_{65}k_{64}k_{40} \oplus k_{74}k_{65}k_{64}k_{40} \oplus k_{73}k_{72}k_{65}k_{64}k_{40} \oplus \\
& k_{71}k_{65}k_{64}k_{40} \oplus k_{74}k_{71}k_{65}k_{64}k_{40} \oplus k_{73}k_{72}k_{71}k_{65}k_{64}k_{40} \oplus k_{70}k_{69}k_{65}k_{64}k_{40} \oplus \\
& k_{74}k_{70}k_{69}k_{65}k_{64}k_{40} \oplus k_{73}k_{72}k_{70}k_{69}k_{65}k_{64}k_{40} \oplus k_{59}k_{40} \oplus k_{74}k_{59}k_{40} \oplus \\
& k_{73}k_{72}k_{59}k_{40} \oplus k_{66}k_{59}k_{40} \oplus k_{74}k_{66}k_{59}k_{40} \oplus k_{73}k_{72}k_{66}k_{59}k_{40} \oplus \\
& k_{65}k_{64}k_{59}k_{40} \oplus k_{74}k_{65}k_{64}k_{59}k_{40} \oplus k_{73}k_{72}k_{65}k_{64}k_{59}k_{40} \oplus k_{58}k_{40} \oplus \\
& k_{74}k_{58}k_{40} \oplus k_{73}k_{72}k_{58}k_{40} \oplus k_{66}k_{58}k_{40} \oplus k_{74}k_{66}k_{58}k_{40} \oplus k_{73}k_{72}k_{66}k_{58}k_{40} \oplus \\
& k_{65}k_{64}k_{58}k_{40} \oplus k_{74}k_{65}k_{64}k_{58}k_{40} \oplus k_{73}k_{72}k_{65}k_{64}k_{58}k_{40} \oplus k_{58}k_{57}k_{40} \oplus \\
& k_{74}k_{58}k_{57}k_{40} \oplus k_{73}k_{72}k_{58}k_{57}k_{40} \oplus k_{66}k_{58}k_{57}k_{40} \oplus k_{74}k_{66}k_{58}k_{57}k_{40} \oplus \\
& k_{73}k_{72}k_{66}k_{58}k_{57}k_{40} \oplus k_{65}k_{64}k_{58}k_{57}k_{40} \oplus k_{74}k_{65}k_{64}k_{58}k_{57}k_{40} \oplus \\
& k_{73}k_{72}k_{65}k_{64}k_{58}k_{57}k_{40} \oplus k_{47}k_{40} \oplus k_{71}k_{47}k_{40} \oplus k_{70}k_{69}k_{47}k_{40} \oplus k_{68}k_{47}k_{40} \oplus \\
& k_{66}k_{47}k_{40} \oplus k_{71}k_{66}k_{47}k_{40} \oplus k_{70}k_{69}k_{66}k_{47}k_{40} \oplus k_{67}k_{66}k_{47}k_{40} \oplus \\
& k_{65}k_{64}k_{47}k_{40} \oplus k_{71}k_{65}k_{64}k_{47}k_{40} \oplus k_{70}k_{69}k_{65}k_{64}k_{47}k_{40} \oplus k_{59}k_{47}k_{40} \oplus \\
& k_{66}k_{59}k_{47}k_{40} \oplus k_{65}k_{64}k_{59}k_{47}k_{40} \oplus k_{58}k_{47}k_{40} \oplus k_{66}k_{58}k_{47}k_{40} \oplus \\
& k_{65}k_{64}k_{58}k_{47}k_{40} \oplus k_{58}k_{57}k_{47}k_{40} \oplus k_{66}k_{58}k_{57}k_{47}k_{40} \oplus k_{65}k_{64}k_{58}k_{57}k_{47}k_{40} \oplus \\
& k_{44}k_{40} \oplus k_{74}k_{44}k_{40} \oplus k_{73}k_{72}k_{44}k_{40} \oplus k_{66}k_{44}k_{40} \oplus k_{74}k_{66}k_{44}k_{40} \oplus \\
& k_{73}k_{72}k_{66}k_{44}k_{40} \oplus k_{65}k_{64}k_{44}k_{40} \oplus k_{74}k_{65}k_{64}k_{44}k_{40} \oplus k_{73}k_{72}k_{65}k_{64}k_{44}k_{40} \oplus \\
& k_{47}k_{44}k_{40} \oplus k_{66}k_{47}k_{44}k_{40} \oplus k_{65}k_{64}k_{47}k_{44}k_{40} \oplus k_{74}k_{41}k_{40} \oplus k_{73}k_{72}k_{41}k_{40} \oplus \\
& k_{47}k_{41}k_{40} \oplus k_{39} \oplus k_{67}k_{39} \oplus k_{74}k_{67}k_{39} \oplus k_{73}k_{72}k_{67}k_{39} \oplus k_{71}k_{67}k_{39} \oplus \\
& k_{74}k_{71}k_{67}k_{39} \oplus k_{73}k_{72}k_{71}k_{67}k_{39} \oplus k_{70}k_{69}k_{67}k_{39} \oplus k_{74}k_{70}k_{69}k_{67}k_{39} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{67}k_{39} \oplus k_{66}k_{65}k_{39} \oplus k_{74}k_{66}k_{65}k_{39} \oplus k_{73}k_{72}k_{66}k_{65}k_{39} \oplus \\
& k_{71}k_{66}k_{65}k_{39} \oplus k_{74}k_{71}k_{66}k_{65}k_{39} \oplus k_{73}k_{72}k_{71}k_{66}k_{65}k_{39} \oplus k_{70}k_{69}k_{66}k_{65}k_{39} \oplus \\
& k_{74}k_{70}k_{69}k_{66}k_{65}k_{39} \oplus k_{73}k_{72}k_{70}k_{69}k_{66}k_{65}k_{39} \oplus k_{62}k_{39} \oplus k_{67}k_{59}k_{39} \oplus \\
& k_{74}k_{67}k_{59}k_{39} \oplus k_{73}k_{72}k_{67}k_{59}k_{39} \oplus k_{66}k_{65}k_{59}k_{39} \oplus k_{74}k_{66}k_{65}k_{59}k_{39} \oplus \\
& k_{73}k_{72}k_{66}k_{65}k_{59}k_{39} \oplus k_{67}k_{58}k_{39} \oplus k_{74}k_{67}k_{58}k_{39} \oplus k_{73}k_{72}k_{67}k_{58}k_{39} \oplus \\
& k_{66}k_{65}k_{58}k_{39} \oplus k_{74}k_{66}k_{65}k_{58}k_{39} \oplus k_{73}k_{72}k_{66}k_{65}k_{58}k_{39} \oplus k_{67}k_{58}k_{57}k_{39} \oplus \\
& k_{74}k_{67}k_{58}k_{57}k_{39} \oplus k_{73}k_{72}k_{67}k_{58}k_{57}k_{39} \oplus k_{66}k_{65}k_{58}k_{57}k_{39} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{74}k_{66}k_{65}k_{58}k_{57}k_{39} \oplus k_{73}k_{72}k_{66}k_{65}k_{58}k_{57}k_{39} \oplus k_{67}k_{47}k_{39} \oplus k_{71}k_{67}k_{47}k_{39} \oplus \\
& k_{70}k_{69}k_{67}k_{47}k_{39} \oplus k_{66}k_{65}k_{47}k_{39} \oplus k_{71}k_{66}k_{65}k_{47}k_{39} \oplus k_{70}k_{69}k_{66}k_{65}k_{47}k_{39} \oplus \\
& k_{67}k_{59}k_{47}k_{39} \oplus k_{66}k_{65}k_{59}k_{47}k_{39} \oplus k_{67}k_{58}k_{47}k_{39} \oplus k_{66}k_{65}k_{58}k_{47}k_{39} \oplus \\
& k_{67}k_{58}k_{57}k_{47}k_{39} \oplus k_{66}k_{65}k_{58}k_{57}k_{47}k_{39} \oplus k_{67}k_{44}k_{39} \oplus k_{74}k_{67}k_{44}k_{39} \oplus \\
& k_{73}k_{72}k_{67}k_{44}k_{39} \oplus k_{66}k_{65}k_{44}k_{39} \oplus k_{74}k_{66}k_{65}k_{44}k_{39} \oplus k_{73}k_{72}k_{66}k_{65}k_{44}k_{39} \oplus \\
& k_{67}k_{47}k_{44}k_{39} \oplus k_{66}k_{65}k_{47}k_{44}k_{39} \oplus k_{40}k_{39} \oplus k_{74}k_{40}k_{39} \oplus k_{73}k_{72}k_{40}k_{39} \oplus \\
& k_{71}k_{40}k_{39} \oplus k_{74}k_{71}k_{40}k_{39} \oplus k_{73}k_{72}k_{71}k_{40}k_{39} \oplus k_{70}k_{69}k_{40}k_{39} \oplus \\
& k_{74}k_{70}k_{69}k_{40}k_{39} \oplus k_{73}k_{72}k_{70}k_{69}k_{40}k_{39} \oplus k_{62}k_{40}k_{39} \oplus k_{59}k_{40}k_{39} \oplus \\
& k_{74}k_{59}k_{40}k_{39} \oplus k_{73}k_{72}k_{59}k_{40}k_{39} \oplus k_{58}k_{40}k_{39} \oplus k_{74}k_{58}k_{40}k_{39} \oplus \\
& k_{73}k_{72}k_{58}k_{40}k_{39} \oplus k_{58}k_{57}k_{40}k_{39} \oplus k_{74}k_{58}k_{57}k_{40}k_{39} \oplus k_{73}k_{72}k_{58}k_{57}k_{40}k_{39} \oplus \\
& k_{47}k_{40}k_{39} \oplus k_{71}k_{47}k_{40}k_{39} \oplus k_{70}k_{69}k_{47}k_{40}k_{39} \oplus k_{59}k_{47}k_{40}k_{39} \oplus \\
& k_{58}k_{47}k_{40}k_{39} \oplus k_{58}k_{57}k_{47}k_{40}k_{39} \oplus k_{44}k_{40}k_{39} \oplus k_{74}k_{44}k_{40}k_{39} \oplus \\
& k_{73}k_{72}k_{44}k_{40}k_{39} \oplus k_{47}k_{44}k_{40}k_{39} \oplus k_{38} \oplus k_{62}k_{38} \oplus k_{37} \oplus k_{74}k_{37} \oplus \\
& k_{73}k_{72}k_{37} \oplus k_{63}k_{37} \oplus k_{63}k_{62}k_{37} \oplus k_{74}k_{50}k_{37} \oplus k_{73}k_{72}k_{50}k_{37} \oplus \\
& k_{74}k_{49}k_{48}k_{37} \oplus k_{73}k_{72}k_{49}k_{48}k_{37} \oplus k_{47}k_{37} \oplus k_{50}k_{47}k_{37} \oplus k_{49}k_{48}k_{47}k_{37} \oplus \\
& k_{79}k_{36} \oplus k_{79}k_{78}k_{36} \oplus k_{78}k_{77}k_{36} \oplus k_{76}k_{36} \oplus k_{75}k_{36} \oplus k_{75}k_{74}k_{36} \oplus k_{73}k_{36} \oplus \\
& k_{74}k_{73}k_{36} \oplus k_{72}k_{36} \oplus k_{79}k_{78}k_{71}k_{36} \oplus k_{79}k_{78}k_{74}k_{71}k_{36} \oplus k_{73}k_{71}k_{36} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{71}k_{36} \oplus k_{71}k_{70}k_{36} \oplus k_{79}k_{78}k_{70}k_{69}k_{36} \oplus k_{79}k_{78}k_{74}k_{70}k_{69}k_{36} \oplus \\
& k_{73}k_{70}k_{69}k_{36} \oplus k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{36} \oplus k_{72}k_{71}k_{70}k_{69}k_{36} \oplus k_{64}k_{36} \oplus \\
& k_{62}k_{36} \oplus k_{64}k_{62}k_{36} \oplus k_{61}k_{36} \oplus k_{79}k_{78}k_{59}k_{36} \oplus k_{79}k_{78}k_{74}k_{59}k_{36} \oplus \\
& k_{73}k_{59}k_{36} \oplus k_{79}k_{78}k_{73}k_{72}k_{59}k_{36} \oplus k_{72}k_{71}k_{59}k_{36} \oplus k_{60}k_{59}k_{36} \oplus k_{58}k_{36} \oplus \\
& k_{78}k_{58}k_{36} \oplus k_{79}k_{78}k_{58}k_{36} \oplus k_{77}k_{76}k_{58}k_{36} \oplus k_{79}k_{78}k_{74}k_{58}k_{36} \oplus k_{73}k_{58}k_{36} \oplus \\
& k_{72}k_{58}k_{36} \oplus k_{79}k_{78}k_{73}k_{72}k_{58}k_{36} \oplus k_{72}k_{71}k_{58}k_{36} \oplus k_{71}k_{70}k_{58}k_{36} \oplus \\
& k_{79}k_{78}k_{58}k_{57}k_{36} \oplus k_{79}k_{78}k_{74}k_{58}k_{57}k_{36} \oplus k_{73}k_{58}k_{57}k_{36} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{58}k_{57}k_{36} \oplus k_{72}k_{71}k_{58}k_{57}k_{36} \oplus k_{74}k_{54}k_{36} \oplus k_{73}k_{72}k_{54}k_{36} \oplus \\
& k_{71}k_{54}k_{36} \oplus k_{70}k_{69}k_{54}k_{36} \oplus k_{59}k_{54}k_{36} \oplus k_{58}k_{54}k_{36} \oplus k_{58}k_{57}k_{54}k_{36} \oplus \\
& k_{53}k_{36} \oplus k_{71}k_{53}k_{36} \oplus k_{74}k_{71}k_{53}k_{36} \oplus k_{73}k_{72}k_{71}k_{53}k_{36} \oplus k_{70}k_{69}k_{53}k_{36} \oplus \\
& k_{74}k_{70}k_{69}k_{53}k_{36} \oplus k_{73}k_{72}k_{70}k_{69}k_{53}k_{36} \oplus k_{59}k_{53}k_{36} \oplus k_{74}k_{59}k_{53}k_{36} \oplus \\
& k_{73}k_{72}k_{59}k_{53}k_{36} \oplus k_{58}k_{53}k_{36} \oplus k_{74}k_{58}k_{53}k_{36} \oplus k_{73}k_{72}k_{58}k_{53}k_{36} \oplus \\
& k_{58}k_{57}k_{53}k_{36} \oplus k_{74}k_{58}k_{57}k_{53}k_{36} \oplus k_{73}k_{72}k_{58}k_{57}k_{53}k_{36} \oplus k_{52}k_{36} \oplus \\
& k_{58}k_{51}k_{36} \oplus k_{49}k_{36} \oplus k_{48}k_{36} \oplus k_{79}k_{78}k_{71}k_{47}k_{36} \oplus k_{79}k_{78}k_{70}k_{69}k_{47}k_{36} \oplus \\
& k_{79}k_{78}k_{59}k_{47}k_{36} \oplus k_{79}k_{78}k_{58}k_{47}k_{36} \oplus k_{79}k_{78}k_{58}k_{57}k_{47}k_{36} \oplus k_{54}k_{47}k_{36} \oplus \\
& k_{71}k_{53}k_{47}k_{36} \oplus k_{70}k_{69}k_{53}k_{47}k_{36} \oplus k_{59}k_{53}k_{47}k_{36} \oplus k_{58}k_{53}k_{47}k_{36} \oplus \\
& k_{58}k_{57}k_{53}k_{47}k_{36} \oplus k_{46}k_{36} \oplus k_{71}k_{46}k_{36} \oplus k_{70}k_{69}k_{46}k_{36} \oplus k_{59}k_{46}k_{36} \oplus \\
& k_{58}k_{46}k_{36} \oplus k_{58}k_{57}k_{46}k_{36} \oplus k_{45}k_{36} \oplus k_{58}k_{45}k_{36} \oplus k_{79}k_{78}k_{44}k_{36} \oplus \\
& k_{79}k_{78}k_{74}k_{44}k_{36} \oplus k_{73}k_{44}k_{36} \oplus k_{79}k_{78}k_{73}k_{72}k_{44}k_{36} \oplus k_{72}k_{71}k_{44}k_{36} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{54}k_{44}k_{36} \oplus k_{53}k_{44}k_{36} \oplus k_{74}k_{53}k_{44}k_{36} \oplus k_{73}k_{72}k_{53}k_{44}k_{36} \oplus \\
& k_{79}k_{78}k_{47}k_{44}k_{36} \oplus k_{53}k_{47}k_{44}k_{36} \oplus k_{46}k_{44}k_{36} \oplus k_{37}k_{36} \oplus k_{62}k_{37}k_{36} \oplus \\
& k_{79}k_{78}k_{35} \oplus k_{76}k_{35} \oplus k_{75}k_{35} \oplus k_{77}k_{75}k_{35} \oplus k_{74}k_{35} \oplus k_{79}k_{78}k_{74}k_{35} \oplus \\
& k_{79}k_{78}k_{73}k_{35} \oplus k_{74}k_{73}k_{35} \oplus k_{77}k_{74}k_{73}k_{35} \oplus k_{76}k_{74}k_{73}k_{35} \oplus k_{75}k_{74}k_{73}k_{35} \oplus \\
& k_{76}k_{75}k_{74}k_{73}k_{35} \oplus k_{73}k_{72}k_{35} \oplus k_{79}k_{78}k_{73}k_{72}k_{35} \oplus k_{74}k_{71}k_{35} \oplus k_{72}k_{71}k_{35} \oplus \\
& k_{79}k_{78}k_{72}k_{71}k_{35} \oplus k_{73}k_{72}k_{71}k_{35} \oplus k_{71}k_{70}k_{35} \oplus k_{74}k_{70}k_{69}k_{35} \oplus \\
& k_{72}k_{70}k_{69}k_{35} \oplus k_{73}k_{72}k_{70}k_{69}k_{35} \oplus k_{71}k_{70}k_{69}k_{35} \oplus k_{79}k_{78}k_{61}k_{35} \oplus \\
& k_{73}k_{61}k_{35} \oplus k_{72}k_{61}k_{35} \oplus k_{71}k_{61}k_{35} \oplus k_{79}k_{78}k_{71}k_{61}k_{35} \oplus \\
& k_{79}k_{78}k_{74}k_{71}k_{61}k_{35} \oplus k_{73}k_{71}k_{61}k_{35} \oplus k_{79}k_{78}k_{73}k_{72}k_{71}k_{61}k_{35} \oplus \\
& k_{71}k_{70}k_{61}k_{35} \oplus k_{70}k_{69}k_{61}k_{35} \oplus k_{79}k_{78}k_{70}k_{69}k_{61}k_{35} \oplus \\
& k_{79}k_{78}k_{74}k_{70}k_{69}k_{61}k_{35} \oplus k_{73}k_{70}k_{69}k_{61}k_{35} \oplus k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{61}k_{35} \oplus \\
& k_{72}k_{71}k_{70}k_{69}k_{61}k_{35} \oplus k_{74}k_{59}k_{35} \oplus k_{72}k_{59}k_{35} \oplus k_{73}k_{72}k_{59}k_{35} \oplus \\
& k_{71}k_{70}k_{59}k_{35} \oplus k_{61}k_{59}k_{35} \oplus k_{79}k_{78}k_{61}k_{59}k_{35} \oplus k_{79}k_{78}k_{74}k_{61}k_{59}k_{35} \oplus \\
& k_{73}k_{61}k_{59}k_{35} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{59}k_{35} \oplus k_{72}k_{71}k_{61}k_{59}k_{35} \oplus \\
& k_{79}k_{78}k_{60}k_{59}k_{35} \oplus k_{79}k_{78}k_{74}k_{60}k_{59}k_{35} \oplus k_{72}k_{60}k_{59}k_{35} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{60}k_{59}k_{35} \oplus k_{79}k_{78}k_{71}k_{60}k_{59}k_{35} \oplus k_{79}k_{78}k_{74}k_{71}k_{60}k_{59}k_{35} \oplus \\
& k_{73}k_{71}k_{60}k_{59}k_{35} \oplus k_{72}k_{71}k_{60}k_{59}k_{35} \oplus k_{79}k_{78}k_{73}k_{72}k_{71}k_{60}k_{59}k_{35} \oplus \\
& k_{71}k_{70}k_{60}k_{59}k_{35} \oplus k_{79}k_{78}k_{70}k_{69}k_{60}k_{59}k_{35} \oplus k_{79}k_{78}k_{74}k_{70}k_{69}k_{60}k_{59}k_{35} \oplus \\
& k_{73}k_{70}k_{69}k_{60}k_{59}k_{35} \oplus k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{60}k_{59}k_{35} \oplus \\
& k_{72}k_{71}k_{70}k_{69}k_{60}k_{59}k_{35} \oplus k_{58}k_{35} \oplus k_{77}k_{58}k_{35} \oplus k_{76}k_{58}k_{35} \oplus k_{75}k_{58}k_{35} \oplus \\
& k_{74}k_{58}k_{35} \oplus k_{73}k_{58}k_{35} \oplus k_{74}k_{73}k_{58}k_{35} \oplus k_{76}k_{74}k_{73}k_{58}k_{35} \oplus \\
& k_{75}k_{74}k_{73}k_{58}k_{35} \oplus k_{72}k_{58}k_{35} \oplus k_{73}k_{72}k_{58}k_{35} \oplus k_{72}k_{71}k_{58}k_{35} \oplus \\
& k_{71}k_{70}k_{58}k_{35} \oplus k_{61}k_{58}k_{35} \oplus k_{79}k_{78}k_{61}k_{58}k_{35} \oplus k_{79}k_{78}k_{74}k_{61}k_{58}k_{35} \oplus \\
& k_{73}k_{61}k_{58}k_{35} \oplus k_{72}k_{61}k_{58}k_{35} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{58}k_{35} \oplus k_{72}k_{71}k_{61}k_{58}k_{35} \oplus \\
& k_{71}k_{70}k_{61}k_{58}k_{35} \oplus k_{79}k_{78}k_{60}k_{59}k_{58}k_{35} \oplus k_{79}k_{78}k_{74}k_{60}k_{59}k_{58}k_{35} \oplus \\
& k_{73}k_{60}k_{59}k_{58}k_{35} \oplus k_{72}k_{60}k_{59}k_{58}k_{35} \oplus k_{79}k_{78}k_{73}k_{72}k_{60}k_{59}k_{58}k_{35} \oplus \\
& k_{72}k_{71}k_{60}k_{59}k_{58}k_{35} \oplus k_{71}k_{70}k_{60}k_{59}k_{58}k_{35} \oplus k_{74}k_{58}k_{57}k_{35} \oplus k_{72}k_{58}k_{57}k_{35} \oplus \\
& k_{73}k_{72}k_{58}k_{57}k_{35} \oplus k_{71}k_{70}k_{58}k_{57}k_{35} \oplus k_{61}k_{58}k_{57}k_{35} \oplus k_{79}k_{78}k_{61}k_{58}k_{57}k_{35} \oplus \\
& k_{79}k_{78}k_{74}k_{61}k_{58}k_{57}k_{35} \oplus k_{73}k_{61}k_{58}k_{57}k_{35} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{58}k_{57}k_{35} \oplus \\
& k_{72}k_{71}k_{61}k_{58}k_{57}k_{35} \oplus k_{79}k_{78}k_{60}k_{59}k_{58}k_{57}k_{35} \oplus k_{79}k_{78}k_{74}k_{60}k_{59}k_{58}k_{57}k_{35} \oplus \\
& k_{73}k_{60}k_{59}k_{58}k_{57}k_{35} \oplus k_{79}k_{78}k_{73}k_{72}k_{60}k_{59}k_{58}k_{57}k_{35} \oplus \\
& k_{72}k_{71}k_{60}k_{59}k_{58}k_{57}k_{35} \oplus k_{79}k_{78}k_{55}k_{35} \oplus k_{71}k_{55}k_{35} \oplus k_{70}k_{69}k_{55}k_{35} \oplus \\
& k_{59}k_{55}k_{35} \oplus k_{58}k_{55}k_{35} \oplus k_{58}k_{57}k_{55}k_{35} \oplus k_{76}k_{54}k_{35} \oplus k_{75}k_{74}k_{54}k_{35} \oplus \\
& k_{71}k_{54}k_{35} \oplus k_{74}k_{71}k_{54}k_{35} \oplus k_{73}k_{72}k_{71}k_{54}k_{35} \oplus k_{70}k_{69}k_{54}k_{35} \oplus \\
& k_{74}k_{70}k_{69}k_{54}k_{35} \oplus k_{73}k_{72}k_{70}k_{69}k_{54}k_{35} \oplus k_{74}k_{61}k_{54}k_{35} \oplus k_{73}k_{72}k_{61}k_{54}k_{35} \oplus \\
& k_{71}k_{61}k_{54}k_{35} \oplus k_{70}k_{69}k_{61}k_{54}k_{35} \oplus k_{59}k_{54}k_{35} \oplus k_{74}k_{59}k_{54}k_{35} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{73}k_{72}k_{59}k_{54}k_{35} \oplus k_{61}k_{59}k_{54}k_{35} \oplus k_{60}k_{59}k_{54}k_{35} \oplus k_{74}k_{60}k_{59}k_{54}k_{35} \oplus \\
& k_{73}k_{72}k_{60}k_{59}k_{54}k_{35} \oplus k_{71}k_{60}k_{59}k_{54}k_{35} \oplus k_{70}k_{69}k_{60}k_{59}k_{54}k_{35} \oplus k_{58}k_{54}k_{35} \oplus \\
& k_{74}k_{58}k_{54}k_{35} \oplus k_{73}k_{72}k_{58}k_{54}k_{35} \oplus k_{61}k_{58}k_{54}k_{35} \oplus k_{60}k_{59}k_{58}k_{54}k_{35} \oplus \\
& k_{58}k_{57}k_{54}k_{35} \oplus k_{74}k_{58}k_{57}k_{54}k_{35} \oplus k_{73}k_{72}k_{58}k_{57}k_{54}k_{35} \oplus k_{61}k_{58}k_{57}k_{54}k_{35} \oplus \\
& k_{60}k_{59}k_{58}k_{57}k_{54}k_{35} \oplus k_{53}k_{35} \oplus k_{74}k_{53}k_{35} \oplus k_{73}k_{53}k_{35} \oplus k_{73}k_{72}k_{53}k_{35} \oplus \\
& k_{72}k_{71}k_{53}k_{35} \oplus k_{61}k_{53}k_{35} \oplus k_{71}k_{61}k_{53}k_{35} \oplus k_{74}k_{71}k_{61}k_{53}k_{35} \oplus \\
& k_{73}k_{72}k_{71}k_{61}k_{53}k_{35} \oplus k_{70}k_{69}k_{61}k_{53}k_{35} \oplus k_{74}k_{70}k_{69}k_{61}k_{53}k_{35} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{61}k_{53}k_{35} \oplus k_{61}k_{59}k_{53}k_{35} \oplus k_{74}k_{61}k_{59}k_{53}k_{35} \oplus \\
& k_{73}k_{72}k_{61}k_{59}k_{53}k_{35} \oplus k_{60}k_{59}k_{53}k_{35} \oplus k_{74}k_{60}k_{59}k_{53}k_{35} \oplus \\
& k_{73}k_{72}k_{60}k_{59}k_{53}k_{35} \oplus k_{71}k_{60}k_{59}k_{53}k_{35} \oplus k_{74}k_{71}k_{60}k_{59}k_{53}k_{35} \oplus \\
& k_{73}k_{72}k_{71}k_{60}k_{59}k_{53}k_{35} \oplus k_{70}k_{69}k_{60}k_{59}k_{53}k_{35} \oplus k_{74}k_{70}k_{69}k_{60}k_{59}k_{53}k_{35} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{60}k_{59}k_{53}k_{35} \oplus k_{61}k_{58}k_{53}k_{35} \oplus k_{74}k_{61}k_{58}k_{53}k_{35} \oplus \\
& k_{73}k_{72}k_{61}k_{58}k_{53}k_{35} \oplus k_{60}k_{59}k_{58}k_{53}k_{35} \oplus k_{74}k_{60}k_{59}k_{58}k_{53}k_{35} \oplus \\
& k_{73}k_{72}k_{60}k_{59}k_{58}k_{53}k_{35} \oplus k_{61}k_{58}k_{57}k_{53}k_{35} \oplus k_{74}k_{61}k_{58}k_{57}k_{53}k_{35} \oplus \\
& k_{73}k_{72}k_{61}k_{58}k_{57}k_{53}k_{35} \oplus k_{60}k_{59}k_{58}k_{57}k_{53}k_{35} \oplus k_{74}k_{60}k_{59}k_{58}k_{57}k_{53}k_{35} \oplus \\
& k_{73}k_{72}k_{60}k_{59}k_{58}k_{57}k_{53}k_{35} \oplus k_{55}k_{53}k_{35} \oplus k_{75}k_{50}k_{35} \oplus k_{74}k_{73}k_{50}k_{35} \oplus \\
& k_{61}k_{50}k_{35} \oplus k_{60}k_{59}k_{50}k_{35} \oplus k_{58}k_{50}k_{35} \oplus k_{49}k_{35} \oplus k_{75}k_{49}k_{35} \oplus \\
& k_{74}k_{73}k_{49}k_{35} \oplus k_{58}k_{49}k_{35} \oplus k_{75}k_{58}k_{49}k_{35} \oplus k_{74}k_{73}k_{58}k_{49}k_{35} \oplus k_{54}k_{49}k_{35} \oplus \\
& k_{48}k_{35} \oplus k_{77}k_{48}k_{35} \oplus k_{76}k_{48}k_{35} \oplus k_{76}k_{75}k_{48}k_{35} \oplus k_{75}k_{74}k_{48}k_{35} \oplus \\
& k_{58}k_{48}k_{35} \oplus k_{76}k_{58}k_{48}k_{35} \oplus k_{75}k_{74}k_{58}k_{48}k_{35} \oplus k_{50}k_{48}k_{35} \oplus k_{49}k_{48}k_{35} \oplus \\
& k_{61}k_{49}k_{48}k_{35} \oplus k_{60}k_{59}k_{49}k_{48}k_{35} \oplus k_{58}k_{49}k_{48}k_{35} \oplus k_{47}k_{35} \oplus k_{79}k_{78}k_{47}k_{35} \oplus \\
& k_{71}k_{47}k_{35} \oplus k_{70}k_{69}k_{47}k_{35} \oplus k_{79}k_{78}k_{71}k_{61}k_{47}k_{35} \oplus k_{79}k_{78}k_{70}k_{69}k_{61}k_{47}k_{35} \oplus \\
& k_{59}k_{47}k_{35} \oplus k_{79}k_{78}k_{61}k_{59}k_{47}k_{35} \oplus k_{79}k_{78}k_{60}k_{59}k_{47}k_{35} \oplus \\
& k_{79}k_{78}k_{71}k_{60}k_{59}k_{47}k_{35} \oplus k_{79}k_{78}k_{70}k_{69}k_{60}k_{59}k_{47}k_{35} \oplus k_{58}k_{47}k_{35} \oplus \\
& k_{79}k_{78}k_{61}k_{58}k_{47}k_{35} \oplus k_{79}k_{78}k_{60}k_{59}k_{58}k_{47}k_{35} \oplus k_{58}k_{57}k_{47}k_{35} \oplus \\
& k_{79}k_{78}k_{61}k_{58}k_{57}k_{47}k_{35} \oplus k_{79}k_{78}k_{60}k_{59}k_{58}k_{57}k_{47}k_{35} \oplus k_{71}k_{54}k_{47}k_{35} \oplus \\
& k_{70}k_{69}k_{54}k_{47}k_{35} \oplus k_{61}k_{54}k_{47}k_{35} \oplus k_{59}k_{54}k_{47}k_{35} \oplus k_{60}k_{59}k_{54}k_{47}k_{35} \oplus \\
& k_{58}k_{54}k_{47}k_{35} \oplus k_{58}k_{57}k_{54}k_{47}k_{35} \oplus k_{53}k_{47}k_{35} \oplus k_{71}k_{61}k_{53}k_{47}k_{35} \oplus \\
& k_{70}k_{69}k_{61}k_{53}k_{47}k_{35} \oplus k_{61}k_{59}k_{53}k_{47}k_{35} \oplus k_{60}k_{59}k_{53}k_{47}k_{35} \oplus \\
& k_{71}k_{60}k_{59}k_{53}k_{47}k_{35} \oplus k_{70}k_{69}k_{60}k_{59}k_{53}k_{47}k_{35} \oplus k_{61}k_{58}k_{53}k_{47}k_{35} \oplus \\
& k_{60}k_{59}k_{58}k_{53}k_{47}k_{35} \oplus k_{61}k_{58}k_{57}k_{53}k_{47}k_{35} \oplus k_{60}k_{59}k_{58}k_{57}k_{53}k_{47}k_{35} \oplus \\
& k_{79}k_{78}k_{46}k_{35} \oplus k_{61}k_{46}k_{35} \oplus k_{71}k_{61}k_{46}k_{35} \oplus k_{70}k_{69}k_{61}k_{46}k_{35} \oplus \\
& k_{61}k_{59}k_{46}k_{35} \oplus k_{71}k_{60}k_{59}k_{46}k_{35} \oplus k_{70}k_{69}k_{60}k_{59}k_{46}k_{35} \oplus k_{58}k_{46}k_{35} \oplus \\
& k_{61}k_{58}k_{46}k_{35} \oplus k_{60}k_{59}k_{58}k_{46}k_{35} \oplus k_{61}k_{58}k_{57}k_{46}k_{35} \oplus k_{60}k_{59}k_{58}k_{57}k_{46}k_{35} \oplus \\
& k_{53}k_{46}k_{35} \oplus k_{71}k_{45}k_{35} \oplus k_{70}k_{69}k_{45}k_{35} \oplus k_{61}k_{45}k_{35} \oplus k_{59}k_{45}k_{35} \oplus \\
& k_{60}k_{59}k_{45}k_{35} \oplus k_{58}k_{45}k_{35} \oplus k_{61}k_{58}k_{45}k_{35} \oplus k_{60}k_{59}k_{58}k_{45}k_{35} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{58}k_{57}k_{45}k_{35} \oplus k_{74}k_{44}k_{35} \oplus k_{72}k_{44}k_{35} \oplus k_{73}k_{72}k_{44}k_{35} \oplus k_{71}k_{70}k_{44}k_{35} \oplus \\
& k_{61}k_{44}k_{35} \oplus k_{79}k_{78}k_{61}k_{44}k_{35} \oplus k_{79}k_{78}k_{74}k_{61}k_{44}k_{35} \oplus k_{73}k_{61}k_{44}k_{35} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{61}k_{44}k_{35} \oplus k_{72}k_{71}k_{61}k_{44}k_{35} \oplus k_{79}k_{78}k_{60}k_{59}k_{44}k_{35} \oplus \\
& k_{79}k_{78}k_{74}k_{60}k_{59}k_{44}k_{35} \oplus k_{73}k_{60}k_{59}k_{44}k_{35} \oplus k_{79}k_{78}k_{73}k_{72}k_{60}k_{59}k_{44}k_{35} \oplus \\
& k_{72}k_{71}k_{60}k_{59}k_{44}k_{35} \oplus k_{55}k_{44}k_{35} \oplus k_{54}k_{44}k_{35} \oplus k_{74}k_{54}k_{44}k_{35} \oplus \\
& k_{73}k_{72}k_{54}k_{44}k_{35} \oplus k_{61}k_{54}k_{44}k_{35} \oplus k_{60}k_{59}k_{54}k_{44}k_{35} \oplus k_{61}k_{53}k_{44}k_{35} \oplus \\
& k_{74}k_{61}k_{53}k_{44}k_{35} \oplus k_{73}k_{72}k_{61}k_{53}k_{44}k_{35} \oplus k_{60}k_{59}k_{53}k_{44}k_{35} \oplus \\
& k_{74}k_{60}k_{59}k_{53}k_{44}k_{35} \oplus k_{73}k_{72}k_{60}k_{59}k_{53}k_{44}k_{35} \oplus k_{47}k_{44}k_{35} \oplus \\
& k_{79}k_{78}k_{61}k_{47}k_{44}k_{35} \oplus k_{79}k_{78}k_{60}k_{59}k_{47}k_{44}k_{35} \oplus k_{54}k_{47}k_{44}k_{35} \oplus \\
& k_{61}k_{53}k_{47}k_{44}k_{35} \oplus k_{60}k_{59}k_{53}k_{47}k_{44}k_{35} \oplus k_{61}k_{46}k_{44}k_{35} \oplus k_{60}k_{59}k_{46}k_{44}k_{35} \oplus \\
& k_{45}k_{44}k_{35} \oplus k_{58}k_{41}k_{35} \oplus k_{74}k_{36}k_{35} \oplus k_{73}k_{72}k_{36}k_{35} \oplus k_{47}k_{36}k_{35} \oplus \\
& k_{79}k_{78}k_{34} \oplus k_{79}k_{78}k_{74}k_{34} \oplus k_{79}k_{78}k_{73}k_{34} \oplus k_{79}k_{78}k_{73}k_{72}k_{34} \oplus k_{71}k_{34} \oplus \\
& k_{74}k_{71}k_{34} \oplus k_{72}k_{71}k_{34} \oplus k_{79}k_{78}k_{72}k_{71}k_{34} \oplus k_{73}k_{72}k_{71}k_{34} \oplus k_{71}k_{70}k_{34} \oplus \\
& k_{70}k_{69}k_{34} \oplus k_{74}k_{70}k_{69}k_{34} \oplus k_{72}k_{70}k_{69}k_{34} \oplus k_{73}k_{72}k_{70}k_{69}k_{34} \oplus \\
& k_{71}k_{70}k_{69}k_{34} \oplus k_{73}k_{62}k_{34} \oplus k_{72}k_{62}k_{34} \oplus k_{79}k_{78}k_{71}k_{62}k_{34} \oplus \\
& k_{79}k_{78}k_{74}k_{71}k_{62}k_{34} \oplus k_{73}k_{71}k_{62}k_{34} \oplus k_{79}k_{78}k_{73}k_{72}k_{71}k_{62}k_{34} \oplus \\
& k_{71}k_{70}k_{62}k_{34} \oplus k_{79}k_{78}k_{70}k_{69}k_{62}k_{34} \oplus k_{79}k_{78}k_{74}k_{70}k_{69}k_{62}k_{34} \oplus \\
& k_{73}k_{70}k_{69}k_{62}k_{34} \oplus k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{62}k_{34} \oplus k_{72}k_{71}k_{70}k_{69}k_{62}k_{34} \oplus \\
& k_{79}k_{78}k_{61}k_{34} \oplus k_{71}k_{61}k_{34} \oplus k_{70}k_{69}k_{61}k_{34} \oplus k_{73}k_{61}k_{60}k_{34} \oplus k_{72}k_{61}k_{60}k_{34} \oplus \\
& k_{79}k_{78}k_{71}k_{61}k_{60}k_{34} \oplus k_{79}k_{78}k_{74}k_{71}k_{61}k_{60}k_{34} \oplus k_{73}k_{71}k_{61}k_{60}k_{34} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{71}k_{61}k_{60}k_{34} \oplus k_{71}k_{70}k_{61}k_{60}k_{34} \oplus k_{79}k_{78}k_{70}k_{69}k_{61}k_{60}k_{34} \oplus \\
& k_{79}k_{78}k_{74}k_{70}k_{69}k_{61}k_{60}k_{34} \oplus k_{73}k_{70}k_{69}k_{61}k_{60}k_{34} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{61}k_{60}k_{34} \oplus k_{72}k_{71}k_{70}k_{69}k_{61}k_{60}k_{34} \oplus k_{59}k_{34} \oplus \\
& k_{74}k_{59}k_{34} \oplus k_{72}k_{59}k_{34} \oplus k_{73}k_{72}k_{59}k_{34} \oplus k_{71}k_{70}k_{59}k_{34} \oplus k_{79}k_{78}k_{62}k_{59}k_{34} \oplus \\
& k_{79}k_{78}k_{74}k_{62}k_{59}k_{34} \oplus k_{73}k_{62}k_{59}k_{34} \oplus k_{79}k_{78}k_{73}k_{72}k_{62}k_{59}k_{34} \oplus \\
& k_{72}k_{71}k_{62}k_{59}k_{34} \oplus k_{61}k_{59}k_{34} \oplus k_{79}k_{78}k_{61}k_{60}k_{59}k_{34} \oplus \\
& k_{79}k_{78}k_{74}k_{61}k_{60}k_{59}k_{34} \oplus k_{73}k_{61}k_{60}k_{59}k_{34} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{60}k_{59}k_{34} \oplus \\
& k_{72}k_{71}k_{61}k_{60}k_{59}k_{34} \oplus k_{77}k_{58}k_{34} \oplus k_{76}k_{58}k_{34} \oplus k_{74}k_{58}k_{34} \oplus k_{73}k_{58}k_{34} \oplus \\
& k_{76}k_{74}k_{73}k_{58}k_{34} \oplus k_{75}k_{74}k_{73}k_{58}k_{34} \oplus k_{72}k_{58}k_{34} \oplus k_{73}k_{72}k_{58}k_{34} \oplus \\
& k_{72}k_{71}k_{58}k_{34} \oplus k_{71}k_{70}k_{58}k_{34} \oplus k_{79}k_{78}k_{62}k_{58}k_{34} \oplus k_{79}k_{78}k_{74}k_{62}k_{58}k_{34} \oplus \\
& k_{73}k_{62}k_{58}k_{34} \oplus k_{72}k_{62}k_{58}k_{34} \oplus k_{79}k_{78}k_{73}k_{72}k_{62}k_{58}k_{34} \oplus k_{72}k_{71}k_{62}k_{58}k_{34} \oplus \\
& k_{71}k_{70}k_{62}k_{58}k_{34} \oplus k_{61}k_{58}k_{34} \oplus k_{79}k_{78}k_{61}k_{60}k_{58}k_{34} \oplus \\
& k_{79}k_{78}k_{74}k_{61}k_{60}k_{58}k_{34} \oplus k_{73}k_{61}k_{60}k_{58}k_{34} \oplus k_{72}k_{61}k_{60}k_{58}k_{34} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{61}k_{60}k_{58}k_{34} \oplus k_{72}k_{71}k_{61}k_{60}k_{58}k_{34} \oplus k_{71}k_{70}k_{61}k_{60}k_{58}k_{34} \oplus \\
& k_{58}k_{57}k_{34} \oplus k_{74}k_{58}k_{57}k_{34} \oplus k_{72}k_{58}k_{57}k_{34} \oplus k_{73}k_{72}k_{58}k_{57}k_{34} \oplus \\
& k_{71}k_{70}k_{58}k_{57}k_{34} \oplus k_{79}k_{78}k_{62}k_{58}k_{57}k_{34} \oplus k_{79}k_{78}k_{74}k_{62}k_{58}k_{57}k_{34} \oplus
\end{aligned}$$



$$\begin{aligned}
& k_{73}k_{62}k_{58}k_{57}k_{34} \oplus k_{79}k_{78}k_{73}k_{72}k_{62}k_{58}k_{57}k_{34} \oplus k_{72}k_{71}k_{62}k_{58}k_{57}k_{34} \oplus \\
& k_{61}k_{58}k_{57}k_{34} \oplus k_{79}k_{78}k_{61}k_{60}k_{58}k_{57}k_{34} \oplus k_{79}k_{78}k_{74}k_{61}k_{60}k_{58}k_{57}k_{34} \oplus \\
& k_{73}k_{61}k_{60}k_{58}k_{57}k_{34} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{60}k_{58}k_{57}k_{34} \oplus \\
& k_{72}k_{71}k_{61}k_{60}k_{58}k_{57}k_{34} \oplus k_{79}k_{78}k_{55}k_{34} \oplus k_{71}k_{55}k_{34} \oplus k_{70}k_{69}k_{55}k_{34} \oplus \\
& k_{59}k_{55}k_{34} \oplus k_{58}k_{55}k_{34} \oplus k_{58}k_{57}k_{55}k_{34} \oplus k_{54}k_{34} \oplus k_{71}k_{54}k_{34} \oplus \\
& k_{74}k_{71}k_{54}k_{34} \oplus k_{73}k_{72}k_{71}k_{54}k_{34} \oplus k_{70}k_{69}k_{54}k_{34} \oplus k_{74}k_{70}k_{69}k_{54}k_{34} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{54}k_{34} \oplus k_{74}k_{62}k_{54}k_{34} \oplus k_{73}k_{72}k_{62}k_{54}k_{34} \oplus k_{71}k_{62}k_{54}k_{34} \oplus \\
& k_{70}k_{69}k_{62}k_{54}k_{34} \oplus k_{74}k_{61}k_{60}k_{54}k_{34} \oplus k_{73}k_{72}k_{61}k_{60}k_{54}k_{34} \oplus \\
& k_{71}k_{61}k_{60}k_{54}k_{34} \oplus k_{70}k_{69}k_{61}k_{60}k_{54}k_{34} \oplus k_{59}k_{54}k_{34} \oplus k_{74}k_{59}k_{54}k_{34} \oplus \\
& k_{73}k_{72}k_{59}k_{54}k_{34} \oplus k_{62}k_{59}k_{54}k_{34} \oplus k_{61}k_{60}k_{59}k_{54}k_{34} \oplus k_{58}k_{54}k_{34} \oplus \\
& k_{74}k_{58}k_{54}k_{34} \oplus k_{73}k_{72}k_{58}k_{54}k_{34} \oplus k_{62}k_{58}k_{54}k_{34} \oplus k_{61}k_{60}k_{58}k_{54}k_{34} \oplus \\
& k_{58}k_{57}k_{54}k_{34} \oplus k_{74}k_{58}k_{57}k_{54}k_{34} \oplus k_{73}k_{72}k_{58}k_{57}k_{54}k_{34} \oplus k_{62}k_{58}k_{57}k_{54}k_{34} \oplus \\
& k_{61}k_{60}k_{58}k_{57}k_{54}k_{34} \oplus k_{53}k_{34} \oplus k_{74}k_{53}k_{34} \oplus k_{73}k_{53}k_{34} \oplus k_{73}k_{72}k_{53}k_{34} \oplus \\
& k_{72}k_{71}k_{53}k_{34} \oplus k_{71}k_{62}k_{53}k_{34} \oplus k_{74}k_{71}k_{62}k_{53}k_{34} \oplus k_{73}k_{72}k_{71}k_{62}k_{53}k_{34} \oplus \\
& k_{70}k_{69}k_{62}k_{53}k_{34} \oplus k_{74}k_{70}k_{69}k_{62}k_{53}k_{34} \oplus k_{73}k_{72}k_{70}k_{69}k_{62}k_{53}k_{34} \oplus \\
& k_{61}k_{53}k_{34} \oplus k_{71}k_{61}k_{60}k_{53}k_{34} \oplus k_{74}k_{71}k_{61}k_{60}k_{53}k_{34} \oplus \\
& k_{73}k_{72}k_{71}k_{61}k_{60}k_{53}k_{34} \oplus k_{70}k_{69}k_{61}k_{60}k_{53}k_{34} \oplus k_{74}k_{70}k_{69}k_{61}k_{60}k_{53}k_{34} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{61}k_{60}k_{53}k_{34} \oplus k_{62}k_{59}k_{53}k_{34} \oplus k_{74}k_{62}k_{59}k_{53}k_{34} \oplus \\
& k_{73}k_{72}k_{62}k_{59}k_{53}k_{34} \oplus k_{61}k_{60}k_{59}k_{53}k_{34} \oplus k_{74}k_{61}k_{60}k_{59}k_{53}k_{34} \oplus \\
& k_{73}k_{72}k_{61}k_{60}k_{59}k_{53}k_{34} \oplus k_{62}k_{58}k_{53}k_{34} \oplus k_{74}k_{62}k_{58}k_{53}k_{34} \oplus \\
& k_{73}k_{72}k_{62}k_{58}k_{53}k_{34} \oplus k_{61}k_{60}k_{58}k_{53}k_{34} \oplus k_{74}k_{61}k_{60}k_{58}k_{53}k_{34} \oplus \\
& k_{73}k_{72}k_{61}k_{60}k_{58}k_{57}k_{53}k_{34} \oplus k_{61}k_{60}k_{58}k_{57}k_{53}k_{34} \oplus k_{74}k_{61}k_{60}k_{58}k_{57}k_{53}k_{34} \oplus \\
& k_{73}k_{72}k_{61}k_{60}k_{58}k_{57}k_{53}k_{34} \oplus k_{55}k_{53}k_{34} \oplus k_{51}k_{34} \oplus k_{50}k_{34} \oplus k_{62}k_{50}k_{34} \oplus \\
& k_{61}k_{60}k_{50}k_{34} \oplus k_{58}k_{50}k_{34} \oplus k_{58}k_{49}k_{34} \oplus k_{75}k_{58}k_{49}k_{34} \oplus k_{74}k_{73}k_{58}k_{49}k_{34} \oplus \\
& k_{76}k_{58}k_{48}k_{34} \oplus k_{75}k_{74}k_{58}k_{48}k_{34} \oplus k_{62}k_{49}k_{48}k_{34} \oplus k_{61}k_{60}k_{49}k_{48}k_{34} \oplus \\
& k_{58}k_{49}k_{48}k_{34} \oplus k_{79}k_{78}k_{47}k_{34} \oplus k_{71}k_{47}k_{34} \oplus k_{70}k_{69}k_{47}k_{34} \oplus \\
& k_{79}k_{78}k_{71}k_{62}k_{47}k_{34} \oplus k_{79}k_{78}k_{70}k_{69}k_{62}k_{47}k_{34} \oplus k_{79}k_{78}k_{71}k_{61}k_{60}k_{47}k_{34} \oplus \\
& k_{79}k_{78}k_{70}k_{69}k_{61}k_{60}k_{47}k_{34} \oplus k_{59}k_{47}k_{34} \oplus k_{79}k_{78}k_{62}k_{59}k_{47}k_{34} \oplus \\
& k_{79}k_{78}k_{61}k_{60}k_{59}k_{47}k_{34} \oplus k_{58}k_{47}k_{34} \oplus k_{79}k_{78}k_{62}k_{58}k_{47}k_{34} \oplus \\
& k_{79}k_{78}k_{61}k_{60}k_{58}k_{47}k_{34} \oplus k_{58}k_{57}k_{47}k_{34} \oplus k_{79}k_{78}k_{62}k_{58}k_{57}k_{47}k_{34} \oplus \\
& k_{79}k_{78}k_{61}k_{60}k_{58}k_{57}k_{47}k_{34} \oplus k_{71}k_{54}k_{47}k_{34} \oplus k_{70}k_{69}k_{54}k_{47}k_{34} \oplus \\
& k_{62}k_{54}k_{47}k_{34} \oplus k_{61}k_{60}k_{54}k_{47}k_{34} \oplus k_{59}k_{54}k_{47}k_{34} \oplus k_{58}k_{54}k_{47}k_{34} \oplus \\
& k_{58}k_{57}k_{54}k_{47}k_{34} \oplus k_{53}k_{47}k_{34} \oplus k_{71}k_{62}k_{53}k_{47}k_{34} \oplus k_{70}k_{69}k_{62}k_{53}k_{47}k_{34} \oplus \\
& k_{71}k_{61}k_{60}k_{53}k_{47}k_{34} \oplus k_{70}k_{69}k_{61}k_{60}k_{53}k_{47}k_{34} \oplus k_{62}k_{59}k_{53}k_{47}k_{34} \oplus \\
& k_{61}k_{60}k_{59}k_{53}k_{47}k_{34} \oplus k_{62}k_{58}k_{53}k_{47}k_{34} \oplus k_{61}k_{60}k_{58}k_{53}k_{47}k_{34} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{62}k_{58}k_{57}k_{53}k_{47}k_{34} \oplus k_{61}k_{60}k_{58}k_{57}k_{53}k_{47}k_{34} \oplus k_{50}k_{48}k_{47}k_{34} \oplus \\
& k_{49}k_{48}k_{47}k_{34} \oplus k_{79}k_{78}k_{46}k_{34} \oplus k_{62}k_{46}k_{34} \oplus k_{71}k_{62}k_{46}k_{34} \oplus \\
& k_{70}k_{69}k_{62}k_{46}k_{34} \oplus k_{61}k_{60}k_{46}k_{34} \oplus k_{71}k_{61}k_{60}k_{46}k_{34} \oplus k_{70}k_{69}k_{61}k_{60}k_{46}k_{34} \oplus \\
& k_{62}k_{59}k_{46}k_{34} \oplus k_{61}k_{60}k_{59}k_{46}k_{34} \oplus k_{58}k_{46}k_{34} \oplus k_{62}k_{58}k_{46}k_{34} \oplus \\
& k_{61}k_{60}k_{58}k_{46}k_{34} \oplus k_{62}k_{58}k_{57}k_{46}k_{34} \oplus k_{61}k_{60}k_{58}k_{57}k_{46}k_{34} \oplus k_{53}k_{46}k_{34} \oplus \\
& k_{71}k_{45}k_{34} \oplus k_{70}k_{69}k_{45}k_{34} \oplus k_{62}k_{45}k_{34} \oplus k_{61}k_{60}k_{45}k_{34} \oplus k_{59}k_{45}k_{34} \oplus \\
& k_{58}k_{45}k_{34} \oplus k_{62}k_{58}k_{45}k_{34} \oplus k_{61}k_{60}k_{58}k_{45}k_{34} \oplus k_{58}k_{57}k_{45}k_{34} \oplus k_{74}k_{44}k_{34} \oplus \\
& k_{72}k_{44}k_{34} \oplus k_{73}k_{72}k_{44}k_{34} \oplus k_{71}k_{70}k_{44}k_{34} \oplus k_{79}k_{78}k_{62}k_{44}k_{34} \oplus \\
& k_{79}k_{78}k_{74}k_{62}k_{44}k_{34} \oplus k_{73}k_{62}k_{44}k_{34} \oplus k_{79}k_{78}k_{73}k_{72}k_{62}k_{44}k_{34} \oplus \\
& k_{72}k_{71}k_{62}k_{44}k_{34} \oplus k_{61}k_{44}k_{34} \oplus k_{79}k_{78}k_{61}k_{60}k_{44}k_{34} \oplus \\
& k_{79}k_{78}k_{74}k_{61}k_{60}k_{44}k_{34} \oplus k_{73}k_{61}k_{60}k_{44}k_{34} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{60}k_{44}k_{34} \oplus \\
& k_{72}k_{71}k_{61}k_{60}k_{44}k_{34} \oplus k_{55}k_{44}k_{34} \oplus k_{54}k_{44}k_{34} \oplus k_{74}k_{54}k_{44}k_{34} \oplus \\
& k_{73}k_{72}k_{54}k_{44}k_{34} \oplus k_{62}k_{54}k_{44}k_{34} \oplus k_{61}k_{60}k_{54}k_{44}k_{34} \oplus k_{62}k_{53}k_{44}k_{34} \oplus \\
& k_{74}k_{62}k_{53}k_{44}k_{34} \oplus k_{73}k_{72}k_{62}k_{53}k_{44}k_{34} \oplus k_{61}k_{60}k_{53}k_{44}k_{34} \oplus \\
& k_{74}k_{61}k_{60}k_{53}k_{44}k_{34} \oplus k_{73}k_{72}k_{61}k_{60}k_{53}k_{44}k_{34} \oplus k_{47}k_{44}k_{34} \oplus \\
& k_{79}k_{78}k_{62}k_{47}k_{44}k_{34} \oplus k_{79}k_{78}k_{61}k_{60}k_{47}k_{44}k_{34} \oplus k_{54}k_{47}k_{44}k_{34} \oplus \\
& k_{62}k_{53}k_{47}k_{44}k_{34} \oplus k_{61}k_{60}k_{53}k_{47}k_{44}k_{34} \oplus k_{62}k_{46}k_{44}k_{34} \oplus k_{61}k_{60}k_{46}k_{44}k_{34} \oplus \\
& k_{45}k_{44}k_{34} \oplus k_{58}k_{41}k_{34} \oplus k_{36}k_{34} \oplus k_{35}k_{34} \oplus k_{73}k_{35}k_{34} \oplus k_{72}k_{35}k_{34} \oplus \\
& k_{79}k_{78}k_{71}k_{35}k_{34} \oplus k_{79}k_{78}k_{74}k_{71}k_{35}k_{34} \oplus k_{73}k_{71}k_{35}k_{34} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{71}k_{35}k_{34} \oplus k_{71}k_{70}k_{35}k_{34} \oplus k_{79}k_{78}k_{70}k_{69}k_{35}k_{34} \oplus \\
& k_{79}k_{78}k_{74}k_{70}k_{69}k_{35}k_{34} \oplus k_{73}k_{70}k_{69}k_{35}k_{34} \oplus k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{35}k_{34} \oplus \\
& k_{72}k_{71}k_{70}k_{69}k_{35}k_{34} \oplus k_{61}k_{35}k_{34} \oplus k_{79}k_{78}k_{59}k_{35}k_{34} \oplus k_{79}k_{78}k_{74}k_{59}k_{35}k_{34} \oplus \\
& k_{73}k_{59}k_{35}k_{34} \oplus k_{79}k_{78}k_{73}k_{72}k_{59}k_{35}k_{34} \oplus k_{72}k_{71}k_{59}k_{35}k_{34} \oplus k_{60}k_{59}k_{35}k_{34} \oplus \\
& k_{79}k_{78}k_{58}k_{35}k_{34} \oplus k_{79}k_{78}k_{74}k_{58}k_{35}k_{34} \oplus k_{73}k_{58}k_{35}k_{34} \oplus k_{72}k_{58}k_{35}k_{34} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{58}k_{35}k_{34} \oplus k_{72}k_{71}k_{58}k_{35}k_{34} \oplus k_{71}k_{70}k_{58}k_{35}k_{34} \oplus \\
& k_{79}k_{78}k_{58}k_{57}k_{35}k_{34} \oplus k_{79}k_{78}k_{74}k_{58}k_{57}k_{35}k_{34} \oplus k_{73}k_{58}k_{57}k_{35}k_{34} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{58}k_{57}k_{35}k_{34} \oplus k_{72}k_{71}k_{58}k_{57}k_{35}k_{34} \oplus k_{74}k_{54}k_{35}k_{34} \oplus \\
& k_{73}k_{72}k_{54}k_{35}k_{34} \oplus k_{71}k_{54}k_{35}k_{34} \oplus k_{70}k_{69}k_{54}k_{35}k_{34} \oplus k_{59}k_{54}k_{35}k_{34} \oplus \\
& k_{58}k_{54}k_{35}k_{34} \oplus k_{58}k_{57}k_{54}k_{35}k_{34} \oplus k_{71}k_{53}k_{35}k_{34} \oplus k_{74}k_{71}k_{53}k_{35}k_{34} \oplus \\
& k_{73}k_{72}k_{71}k_{53}k_{35}k_{34} \oplus k_{70}k_{69}k_{53}k_{35}k_{34} \oplus k_{74}k_{70}k_{69}k_{53}k_{35}k_{34} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{53}k_{35}k_{34} \oplus k_{59}k_{53}k_{35}k_{34} \oplus k_{74}k_{59}k_{53}k_{35}k_{34} \oplus \\
& k_{73}k_{72}k_{59}k_{53}k_{35}k_{34} \oplus k_{58}k_{53}k_{35}k_{34} \oplus k_{74}k_{58}k_{53}k_{35}k_{34} \oplus \\
& k_{73}k_{72}k_{58}k_{53}k_{35}k_{34} \oplus k_{58}k_{57}k_{53}k_{35}k_{34} \oplus k_{74}k_{58}k_{57}k_{53}k_{35}k_{34} \oplus \\
& k_{73}k_{72}k_{58}k_{57}k_{53}k_{35}k_{34} \oplus k_{50}k_{35}k_{34} \oplus k_{49}k_{48}k_{35}k_{34} \oplus k_{79}k_{78}k_{71}k_{47}k_{35}k_{34} \oplus \\
& k_{79}k_{78}k_{70}k_{69}k_{47}k_{35}k_{34} \oplus k_{79}k_{78}k_{59}k_{47}k_{35}k_{34} \oplus k_{79}k_{78}k_{58}k_{47}k_{35}k_{34} \oplus \\
& k_{79}k_{78}k_{58}k_{57}k_{47}k_{35}k_{34} \oplus k_{54}k_{47}k_{35}k_{34} \oplus k_{71}k_{53}k_{47}k_{35}k_{34} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{70}k_{69}k_{53}k_{47}k_{35}k_{34} \oplus k_{59}k_{53}k_{47}k_{35}k_{34} \oplus k_{58}k_{53}k_{47}k_{35}k_{34} \oplus \\
& k_{58}k_{57}k_{53}k_{47}k_{35}k_{34} \oplus k_{46}k_{35}k_{34} \oplus k_{71}k_{46}k_{35}k_{34} \oplus k_{70}k_{69}k_{46}k_{35}k_{34} \oplus \\
& k_{59}k_{46}k_{35}k_{34} \oplus k_{58}k_{46}k_{35}k_{34} \oplus k_{58}k_{57}k_{46}k_{35}k_{34} \oplus k_{45}k_{35}k_{34} \oplus \\
& k_{58}k_{45}k_{35}k_{34} \oplus k_{79}k_{78}k_{44}k_{35}k_{34} \oplus k_{79}k_{78}k_{74}k_{44}k_{35}k_{34} \oplus k_{73}k_{44}k_{35}k_{34} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{44}k_{35}k_{34} \oplus k_{72}k_{71}k_{44}k_{35}k_{34} \oplus k_{54}k_{44}k_{35}k_{34} \oplus k_{53}k_{44}k_{35}k_{34} \oplus \\
& k_{74}k_{53}k_{44}k_{35}k_{34} \oplus k_{73}k_{72}k_{53}k_{44}k_{35}k_{34} \oplus k_{79}k_{78}k_{47}k_{44}k_{35}k_{34} \oplus \\
& k_{53}k_{47}k_{44}k_{35}k_{34} \oplus k_{46}k_{44}k_{35}k_{34} \oplus k_{33} \oplus k_{79}k_{78}k_{33} \oplus k_{75}k_{33} \oplus k_{74}k_{33} \oplus \\
& k_{74}k_{73}k_{33} \oplus k_{72}k_{33} \oplus k_{73}k_{72}k_{33} \oplus k_{71}k_{33} \oplus k_{71}k_{70}k_{33} \oplus k_{70}k_{69}k_{33} \oplus \\
& k_{68}k_{33} \oplus k_{62}k_{33} \oplus k_{60}k_{33} \oplus k_{68}k_{60}k_{33} \oplus k_{61}k_{60}k_{33} \oplus k_{59}k_{33} \oplus k_{58}k_{33} \oplus \\
& k_{58}k_{57}k_{33} \oplus k_{53}k_{33} \oplus k_{48}k_{33} \oplus k_{47}k_{33} \oplus k_{45}k_{33} \oplus k_{44}k_{33} \oplus k_{35}k_{33} \oplus k_{32} \oplus \\
& k_{74}k_{71}k_{32} \oplus k_{73}k_{72}k_{71}k_{32} \oplus k_{74}k_{70}k_{69}k_{32} \oplus k_{73}k_{72}k_{70}k_{69}k_{32} \oplus k_{74}k_{59}k_{32} \oplus \\
& k_{73}k_{72}k_{59}k_{32} \oplus k_{58}k_{32} \oplus k_{74}k_{58}k_{32} \oplus k_{73}k_{72}k_{58}k_{32} \oplus k_{74}k_{58}k_{57}k_{32} \oplus \\
& k_{73}k_{72}k_{58}k_{57}k_{32} \oplus k_{71}k_{47}k_{32} \oplus k_{70}k_{69}k_{47}k_{32} \oplus k_{59}k_{47}k_{32} \oplus k_{58}k_{47}k_{32} \oplus \\
& k_{58}k_{57}k_{47}k_{32} \oplus k_{74}k_{44}k_{32} \oplus k_{73}k_{72}k_{44}k_{32} \oplus k_{47}k_{44}k_{32} \oplus k_{44}k_{33}k_{32} \oplus k_{31} \oplus \\
& k_{63}k_{50}k_{31} \oplus k_{62}k_{61}k_{50}k_{31} \oplus k_{63}k_{49}k_{48}k_{31} \oplus k_{62}k_{61}k_{49}k_{48}k_{31} \oplus k_{50}k_{36}k_{31} \oplus \\
& k_{49}k_{48}k_{36}k_{31} \oplus k_{32}k_{31} \oplus k_{75}k_{32}k_{31} \oplus k_{74}k_{73}k_{32}k_{31} \oplus k_{68}k_{32}k_{31} \oplus \\
& k_{62}k_{32}k_{31} \oplus k_{60}k_{32}k_{31} \oplus k_{68}k_{60}k_{32}k_{31} \oplus k_{61}k_{60}k_{32}k_{31} \oplus k_{48}k_{32}k_{31} \oplus \\
& k_{35}k_{32}k_{31} \oplus k_{60}k_{30} \oplus k_{31}k_{30} \oplus k_{63}k_{50}k_{30}k_{29} \oplus k_{62}k_{61}k_{50}k_{30}k_{29} \oplus \\
& k_{63}k_{49}k_{48}k_{30}k_{29} \oplus k_{62}k_{61}k_{49}k_{48}k_{30}k_{29} \oplus k_{50}k_{36}k_{30}k_{29} \oplus k_{49}k_{48}k_{36}k_{30}k_{29} \oplus \\
& k_{74}k_{27} \oplus k_{73}k_{72}k_{27} \oplus k_{47}k_{27} \oplus k_{26} \oplus k_{74}k_{26} \oplus k_{73}k_{72}k_{26} \oplus k_{71}k_{26} \oplus \\
& k_{74}k_{71}k_{26} \oplus k_{73}k_{72}k_{71}k_{26} \oplus k_{70}k_{69}k_{26} \oplus k_{74}k_{70}k_{69}k_{26} \oplus k_{73}k_{72}k_{70}k_{69}k_{26} \oplus \\
& k_{59}k_{26} \oplus k_{74}k_{59}k_{26} \oplus k_{73}k_{72}k_{59}k_{26} \oplus k_{58}k_{26} \oplus k_{74}k_{58}k_{26} \oplus k_{73}k_{72}k_{58}k_{26} \oplus \\
& k_{58}k_{57}k_{26} \oplus k_{74}k_{58}k_{57}k_{26} \oplus k_{73}k_{72}k_{58}k_{57}k_{26} \oplus k_{47}k_{26} \oplus k_{71}k_{47}k_{26} \oplus \\
& k_{70}k_{69}k_{47}k_{26} \oplus k_{59}k_{47}k_{26} \oplus k_{58}k_{47}k_{26} \oplus k_{58}k_{57}k_{47}k_{26} \oplus k_{44}k_{26} \oplus \\
& k_{74}k_{44}k_{26} \oplus k_{73}k_{72}k_{44}k_{26} \oplus k_{47}k_{44}k_{26} \oplus k_{74}k_{25} \oplus k_{73}k_{72}k_{25} \oplus k_{47}k_{25} \oplus \\
& k_{44}k_{25} \oplus k_{74}k_{24} \oplus k_{73}k_{72}k_{24} \oplus k_{61}k_{24} \oplus k_{60}k_{59}k_{24} \oplus k_{74}k_{50}k_{24} \oplus \\
& k_{73}k_{72}k_{50}k_{24} \oplus k_{74}k_{49}k_{48}k_{24} \oplus k_{73}k_{72}k_{49}k_{48}k_{24} \oplus k_{47}k_{24} \oplus k_{50}k_{47}k_{24} \oplus \\
& k_{49}k_{48}k_{47}k_{24} \oplus k_{44}k_{24} \oplus k_{34}k_{24} \oplus k_{76}k_{23} \oplus k_{75}k_{23} \oplus k_{74}k_{23} \oplus k_{75}k_{74}k_{23} \oplus \\
& k_{73}k_{23} \oplus k_{74}k_{73}k_{23} \oplus k_{73}k_{72}k_{23} \oplus k_{72}k_{71}k_{23} \oplus k_{74}k_{64}k_{23} \oplus k_{73}k_{72}k_{64}k_{23} \oplus \\
& k_{62}k_{23} \oplus k_{74}k_{63}k_{62}k_{23} \oplus k_{73}k_{72}k_{63}k_{62}k_{23} \oplus k_{61}k_{23} \oplus k_{62}k_{61}k_{23} \oplus \\
& k_{61}k_{60}k_{23} \oplus k_{60}k_{59}k_{23} \oplus k_{62}k_{60}k_{59}k_{23} \oplus k_{61}k_{60}k_{59}k_{23} \oplus k_{74}k_{51}k_{23} \oplus \\
& k_{73}k_{72}k_{51}k_{23} \oplus k_{49}k_{23} \oplus k_{61}k_{49}k_{23} \oplus k_{60}k_{59}k_{49}k_{23} \oplus k_{74}k_{50}k_{49}k_{23} \oplus \\
& k_{73}k_{72}k_{50}k_{49}k_{23} \oplus k_{47}k_{23} \oplus k_{64}k_{47}k_{23} \oplus k_{63}k_{62}k_{47}k_{23} \oplus k_{51}k_{47}k_{23} \oplus \\
& k_{50}k_{49}k_{47}k_{23} \oplus k_{61}k_{48}k_{47}k_{23} \oplus k_{60}k_{59}k_{48}k_{47}k_{23} \oplus k_{46}k_{23} \oplus k_{47}k_{46}k_{23} \oplus \\
& k_{44}k_{23} \oplus k_{74}k_{37}k_{23} \oplus k_{73}k_{72}k_{37}k_{23} \oplus k_{47}k_{37}k_{23} \oplus k_{61}k_{35}k_{23} \oplus \\
& k_{60}k_{59}k_{35}k_{23} \oplus k_{34}k_{23} \oplus k_{62}k_{34}k_{23} \oplus k_{61}k_{60}k_{34}k_{23} \oplus k_{49}k_{34}k_{23} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{48}k_{47}k_{34}k_{23} \oplus k_{35}k_{34}k_{23} \oplus k_{63}k_{31}k_{23} \oplus k_{62}k_{61}k_{31}k_{23} \oplus k_{36}k_{31}k_{23} \oplus \\
& k_{63}k_{30}k_{29}k_{23} \oplus k_{62}k_{61}k_{30}k_{29}k_{23} \oplus k_{36}k_{30}k_{29}k_{23} \oplus k_{24}k_{23} \oplus k_{74}k_{24}k_{23} \oplus \\
& k_{73}k_{72}k_{24}k_{23} \oplus k_{47}k_{24}k_{23} \oplus k_{75}k_{22} \oplus k_{74}k_{73}k_{22} \oplus k_{61}k_{50}k_{22} \oplus \\
& k_{60}k_{59}k_{50}k_{22} \oplus k_{48}k_{22} \oplus k_{61}k_{49}k_{48}k_{22} \oplus k_{60}k_{59}k_{49}k_{48}k_{22} \oplus k_{50}k_{34}k_{22} \oplus \\
& k_{49}k_{48}k_{34}k_{22} \oplus k_{61}k_{23}k_{22} \oplus k_{60}k_{59}k_{23}k_{22} \oplus k_{34}k_{23}k_{22} \oplus k_{73}k_{21} \oplus k_{72}k_{21} \oplus \\
& k_{79}k_{78}k_{71}k_{21} \oplus k_{79}k_{78}k_{74}k_{71}k_{21} \oplus k_{73}k_{71}k_{21} \oplus k_{79}k_{78}k_{73}k_{72}k_{71}k_{21} \oplus \\
& k_{71}k_{70}k_{21} \oplus k_{79}k_{78}k_{70}k_{69}k_{21} \oplus k_{79}k_{78}k_{74}k_{70}k_{69}k_{21} \oplus k_{73}k_{70}k_{69}k_{21} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{21} \oplus k_{72}k_{71}k_{70}k_{69}k_{21} \oplus k_{79}k_{78}k_{59}k_{21} \oplus \\
& k_{79}k_{78}k_{74}k_{59}k_{21} \oplus k_{73}k_{59}k_{21} \oplus k_{79}k_{78}k_{73}k_{72}k_{59}k_{21} \oplus k_{72}k_{71}k_{59}k_{21} \oplus \\
& k_{58}k_{21} \oplus k_{79}k_{78}k_{58}k_{21} \oplus k_{79}k_{78}k_{74}k_{58}k_{21} \oplus k_{73}k_{58}k_{21} \oplus k_{72}k_{58}k_{21} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{58}k_{21} \oplus k_{72}k_{71}k_{58}k_{21} \oplus k_{71}k_{70}k_{58}k_{21} \oplus k_{79}k_{78}k_{58}k_{57}k_{21} \oplus \\
& k_{79}k_{78}k_{74}k_{58}k_{57}k_{21} \oplus k_{73}k_{58}k_{57}k_{21} \oplus k_{79}k_{78}k_{73}k_{72}k_{58}k_{57}k_{21} \oplus \\
& k_{72}k_{71}k_{58}k_{57}k_{21} \oplus k_{74}k_{54}k_{21} \oplus k_{73}k_{72}k_{54}k_{21} \oplus k_{71}k_{54}k_{21} \oplus k_{70}k_{69}k_{54}k_{21} \oplus \\
& k_{59}k_{54}k_{21} \oplus k_{58}k_{54}k_{21} \oplus k_{58}k_{57}k_{54}k_{21} \oplus k_{71}k_{53}k_{21} \oplus k_{74}k_{71}k_{53}k_{21} \oplus \\
& k_{73}k_{72}k_{71}k_{53}k_{21} \oplus k_{70}k_{69}k_{53}k_{21} \oplus k_{74}k_{70}k_{69}k_{53}k_{21} \oplus k_{73}k_{72}k_{70}k_{69}k_{53}k_{21} \oplus \\
& k_{59}k_{53}k_{21} \oplus k_{74}k_{59}k_{53}k_{21} \oplus k_{73}k_{72}k_{59}k_{53}k_{21} \oplus k_{58}k_{53}k_{21} \oplus k_{74}k_{58}k_{53}k_{21} \oplus \\
& k_{73}k_{72}k_{58}k_{53}k_{21} \oplus k_{58}k_{57}k_{53}k_{21} \oplus k_{74}k_{58}k_{57}k_{53}k_{21} \oplus k_{73}k_{72}k_{58}k_{57}k_{53}k_{21} \oplus \\
& k_{50}k_{21} \oplus k_{49}k_{48}k_{21} \oplus k_{79}k_{78}k_{71}k_{47}k_{21} \oplus k_{79}k_{78}k_{70}k_{69}k_{47}k_{21} \oplus \\
& k_{79}k_{78}k_{59}k_{47}k_{21} \oplus k_{79}k_{78}k_{58}k_{47}k_{21} \oplus k_{79}k_{78}k_{58}k_{57}k_{47}k_{21} \oplus k_{54}k_{47}k_{21} \oplus \\
& k_{71}k_{53}k_{47}k_{21} \oplus k_{70}k_{69}k_{53}k_{47}k_{21} \oplus k_{59}k_{53}k_{47}k_{21} \oplus k_{58}k_{53}k_{47}k_{21} \oplus \\
& k_{58}k_{57}k_{53}k_{47}k_{21} \oplus k_{46}k_{21} \oplus k_{71}k_{46}k_{21} \oplus k_{70}k_{69}k_{46}k_{21} \oplus k_{59}k_{46}k_{21} \oplus \\
& k_{58}k_{46}k_{21} \oplus k_{58}k_{57}k_{46}k_{21} \oplus k_{45}k_{21} \oplus k_{58}k_{45}k_{21} \oplus k_{79}k_{78}k_{44}k_{21} \oplus \\
& k_{79}k_{78}k_{74}k_{44}k_{21} \oplus k_{73}k_{44}k_{21} \oplus k_{79}k_{78}k_{73}k_{72}k_{44}k_{21} \oplus k_{72}k_{71}k_{44}k_{21} \oplus \\
& k_{54}k_{44}k_{21} \oplus k_{53}k_{44}k_{21} \oplus k_{74}k_{53}k_{44}k_{21} \oplus k_{73}k_{72}k_{53}k_{44}k_{21} \oplus \\
& k_{79}k_{78}k_{47}k_{44}k_{21} \oplus k_{53}k_{47}k_{44}k_{21} \oplus k_{46}k_{44}k_{21} \oplus k_{23}k_{21} \oplus k_{21}k_{20} \oplus k_{18} \oplus \\
& k_{76}k_{17} \oplus k_{75}k_{74}k_{17} \oplus k_{74}k_{71}k_{17} \oplus k_{73}k_{72}k_{71}k_{17} \oplus k_{74}k_{70}k_{69}k_{17} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{17} \oplus k_{71}k_{62}k_{17} \oplus k_{74}k_{71}k_{62}k_{17} \oplus k_{73}k_{72}k_{71}k_{62}k_{17} \oplus \\
& k_{70}k_{69}k_{62}k_{17} \oplus k_{74}k_{70}k_{69}k_{62}k_{17} \oplus k_{73}k_{72}k_{70}k_{69}k_{62}k_{17} \oplus k_{61}k_{17} \oplus \\
& k_{71}k_{61}k_{17} \oplus k_{70}k_{69}k_{61}k_{17} \oplus k_{60}k_{17} \oplus k_{71}k_{61}k_{60}k_{17} \oplus k_{74}k_{71}k_{61}k_{60}k_{17} \oplus \\
& k_{73}k_{72}k_{71}k_{61}k_{60}k_{17} \oplus k_{70}k_{69}k_{61}k_{60}k_{17} \oplus k_{74}k_{70}k_{69}k_{61}k_{60}k_{17} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{61}k_{60}k_{17} \oplus k_{74}k_{59}k_{17} \oplus k_{73}k_{72}k_{59}k_{17} \oplus k_{62}k_{59}k_{17} \oplus \\
& k_{74}k_{62}k_{59}k_{17} \oplus k_{73}k_{72}k_{62}k_{59}k_{17} \oplus k_{61}k_{59}k_{17} \oplus k_{71}k_{60}k_{59}k_{17} \oplus \\
& k_{70}k_{69}k_{60}k_{59}k_{17} \oplus k_{61}k_{60}k_{59}k_{17} \oplus k_{74}k_{61}k_{60}k_{59}k_{17} \oplus k_{73}k_{72}k_{61}k_{60}k_{59}k_{17} \oplus \\
& k_{58}k_{17} \oplus k_{74}k_{58}k_{17} \oplus k_{73}k_{72}k_{58}k_{17} \oplus k_{62}k_{58}k_{17} \oplus k_{74}k_{62}k_{58}k_{17} \oplus \\
& k_{73}k_{72}k_{62}k_{58}k_{17} \oplus k_{61}k_{58}k_{17} \oplus k_{61}k_{60}k_{58}k_{17} \oplus k_{74}k_{61}k_{60}k_{58}k_{17} \oplus \\
& k_{73}k_{72}k_{61}k_{60}k_{58}k_{17} \oplus k_{60}k_{59}k_{58}k_{17} \oplus k_{60}k_{57}k_{17} \oplus k_{74}k_{58}k_{57}k_{17} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{73}k_{72}k_{58}k_{57}k_{17} \oplus k_{62}k_{58}k_{57}k_{17} \oplus k_{74}k_{62}k_{58}k_{57}k_{17} \oplus k_{73}k_{72}k_{62}k_{58}k_{57}k_{17} \oplus \\
& k_{61}k_{58}k_{57}k_{17} \oplus k_{61}k_{60}k_{58}k_{57}k_{17} \oplus k_{74}k_{61}k_{60}k_{58}k_{57}k_{17} \oplus \\
& k_{73}k_{72}k_{61}k_{60}k_{58}k_{57}k_{17} \oplus k_{60}k_{59}k_{58}k_{57}k_{17} \oplus k_{58}k_{56}k_{17} \oplus k_{49}k_{17} \oplus \\
& k_{56}k_{48}k_{17} \oplus k_{71}k_{47}k_{17} \oplus k_{70}k_{69}k_{47}k_{17} \oplus k_{71}k_{62}k_{47}k_{17} \oplus k_{70}k_{69}k_{62}k_{47}k_{17} \oplus \\
& k_{71}k_{61}k_{60}k_{47}k_{17} \oplus k_{70}k_{69}k_{61}k_{60}k_{47}k_{17} \oplus k_{59}k_{47}k_{17} \oplus k_{62}k_{59}k_{47}k_{17} \oplus \\
& k_{61}k_{60}k_{59}k_{47}k_{17} \oplus k_{58}k_{47}k_{17} \oplus k_{62}k_{58}k_{47}k_{17} \oplus k_{61}k_{60}k_{58}k_{47}k_{17} \oplus \\
& k_{58}k_{57}k_{47}k_{17} \oplus k_{62}k_{58}k_{57}k_{47}k_{17} \oplus k_{61}k_{60}k_{58}k_{57}k_{47}k_{17} \oplus k_{74}k_{44}k_{17} \oplus \\
& k_{73}k_{72}k_{44}k_{17} \oplus k_{62}k_{44}k_{17} \oplus k_{74}k_{62}k_{44}k_{17} \oplus k_{73}k_{72}k_{62}k_{44}k_{17} \oplus k_{61}k_{44}k_{17} \oplus \\
& k_{61}k_{60}k_{44}k_{17} \oplus k_{74}k_{61}k_{60}k_{44}k_{17} \oplus k_{73}k_{72}k_{61}k_{60}k_{44}k_{17} \oplus k_{60}k_{59}k_{44}k_{17} \oplus \\
& k_{47}k_{44}k_{17} \oplus k_{62}k_{47}k_{44}k_{17} \oplus k_{61}k_{60}k_{47}k_{44}k_{17} \oplus k_{71}k_{35}k_{17} \oplus k_{74}k_{71}k_{35}k_{17} \oplus \\
& k_{73}k_{72}k_{71}k_{35}k_{17} \oplus k_{70}k_{69}k_{35}k_{17} \oplus k_{74}k_{70}k_{69}k_{35}k_{17} \oplus k_{73}k_{72}k_{70}k_{69}k_{35}k_{17} \oplus \\
& k_{59}k_{35}k_{17} \oplus k_{74}k_{59}k_{35}k_{17} \oplus k_{73}k_{72}k_{59}k_{35}k_{17} \oplus k_{58}k_{35}k_{17} \oplus k_{74}k_{58}k_{35}k_{17} \oplus \\
& k_{73}k_{72}k_{58}k_{35}k_{17} \oplus k_{58}k_{57}k_{35}k_{17} \oplus k_{74}k_{58}k_{57}k_{35}k_{17} \oplus k_{73}k_{72}k_{58}k_{57}k_{35}k_{17} \oplus \\
& k_{71}k_{47}k_{35}k_{17} \oplus k_{70}k_{69}k_{47}k_{35}k_{17} \oplus k_{59}k_{47}k_{35}k_{17} \oplus k_{58}k_{47}k_{35}k_{17} \oplus \\
& k_{58}k_{57}k_{47}k_{35}k_{17} \oplus k_{44}k_{35}k_{17} \oplus k_{74}k_{44}k_{35}k_{17} \oplus k_{73}k_{72}k_{44}k_{35}k_{17} \oplus \\
& k_{47}k_{44}k_{35}k_{17} \oplus k_{34}k_{17} \oplus k_{71}k_{34}k_{17} \oplus k_{70}k_{69}k_{34}k_{17} \oplus k_{59}k_{34}k_{17} \oplus \\
& k_{58}k_{34}k_{17} \oplus k_{58}k_{57}k_{34}k_{17} \oplus k_{44}k_{34}k_{17} \oplus k_{79}k_{78}k_{16} \oplus k_{79}k_{78}k_{74}k_{16} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{16} \oplus k_{71}k_{16} \oplus k_{79}k_{78}k_{74}k_{71}k_{16} \oplus k_{79}k_{78}k_{73}k_{72}k_{71}k_{16} \oplus \\
& k_{70}k_{69}k_{16} \oplus k_{79}k_{78}k_{74}k_{70}k_{69}k_{16} \oplus k_{79}k_{78}k_{73}k_{72}k_{70}k_{69}k_{16} \oplus k_{79}k_{78}k_{62}k_{16} \oplus \\
& k_{71}k_{62}k_{16} \oplus k_{70}k_{69}k_{62}k_{16} \oplus k_{79}k_{78}k_{61}k_{16} \oplus k_{71}k_{61}k_{16} \oplus k_{70}k_{69}k_{61}k_{16} \oplus \\
& k_{79}k_{78}k_{61}k_{60}k_{16} \oplus k_{71}k_{61}k_{60}k_{16} \oplus k_{70}k_{69}k_{61}k_{60}k_{16} \oplus k_{59}k_{16} \oplus \\
& k_{79}k_{78}k_{74}k_{59}k_{16} \oplus k_{79}k_{78}k_{73}k_{72}k_{59}k_{16} \oplus k_{62}k_{59}k_{16} \oplus k_{61}k_{59}k_{16} \oplus \\
& k_{60}k_{59}k_{16} \oplus k_{79}k_{78}k_{60}k_{59}k_{16} \oplus k_{71}k_{60}k_{59}k_{16} \oplus k_{70}k_{69}k_{60}k_{59}k_{16} \oplus \\
& k_{61}k_{60}k_{59}k_{16} \oplus k_{79}k_{78}k_{74}k_{58}k_{16} \oplus k_{79}k_{78}k_{73}k_{72}k_{58}k_{16} \oplus k_{58}k_{57}k_{16} \oplus \\
& k_{79}k_{78}k_{74}k_{58}k_{57}k_{16} \oplus k_{79}k_{78}k_{73}k_{72}k_{58}k_{57}k_{16} \oplus k_{62}k_{58}k_{57}k_{16} \oplus \\
& k_{61}k_{58}k_{57}k_{16} \oplus k_{61}k_{60}k_{58}k_{57}k_{16} \oplus k_{60}k_{59}k_{58}k_{57}k_{16} \oplus k_{53}k_{16} \oplus k_{74}k_{53}k_{16} \oplus \\
& k_{73}k_{72}k_{53}k_{16} \oplus k_{74}k_{71}k_{53}k_{16} \oplus k_{73}k_{72}k_{71}k_{53}k_{16} \oplus k_{74}k_{70}k_{69}k_{53}k_{16} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{53}k_{16} \oplus k_{62}k_{53}k_{16} \oplus k_{61}k_{53}k_{16} \oplus k_{61}k_{60}k_{53}k_{16} \oplus \\
& k_{74}k_{59}k_{53}k_{16} \oplus k_{73}k_{72}k_{59}k_{53}k_{16} \oplus k_{60}k_{59}k_{53}k_{16} \oplus k_{74}k_{58}k_{53}k_{16} \oplus \\
& k_{73}k_{72}k_{58}k_{53}k_{16} \oplus k_{74}k_{58}k_{57}k_{53}k_{16} \oplus k_{73}k_{72}k_{58}k_{57}k_{53}k_{16} \oplus k_{52}k_{16} \oplus \\
& k_{51}k_{16} \oplus k_{50}k_{16} \oplus k_{51}k_{50}k_{16} \oplus k_{50}k_{49}k_{16} \oplus k_{49}k_{48}k_{16} \oplus k_{79}k_{78}k_{47}k_{16} \oplus \\
& k_{79}k_{78}k_{71}k_{47}k_{16} \oplus k_{79}k_{78}k_{70}k_{69}k_{47}k_{16} \oplus k_{79}k_{78}k_{59}k_{47}k_{16} \oplus \\
& k_{79}k_{78}k_{58}k_{47}k_{16} \oplus k_{79}k_{78}k_{58}k_{57}k_{47}k_{16} \oplus k_{53}k_{47}k_{16} \oplus k_{71}k_{53}k_{47}k_{16} \oplus \\
& k_{70}k_{69}k_{53}k_{47}k_{16} \oplus k_{59}k_{53}k_{47}k_{16} \oplus k_{58}k_{53}k_{47}k_{16} \oplus k_{58}k_{57}k_{53}k_{47}k_{16} \oplus \\
& k_{79}k_{78}k_{74}k_{44}k_{16} \oplus k_{79}k_{78}k_{73}k_{72}k_{44}k_{16} \oplus k_{62}k_{44}k_{16} \oplus k_{61}k_{44}k_{16} \oplus \\
& k_{61}k_{60}k_{44}k_{16} \oplus k_{60}k_{59}k_{44}k_{16} \oplus k_{74}k_{53}k_{44}k_{16} \oplus k_{73}k_{72}k_{53}k_{44}k_{16} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{79}k_{78}k_{47}k_{44}k_{16} \oplus k_{53}k_{47}k_{44}k_{16} \oplus k_{37}k_{16} \oplus k_{79}k_{78}k_{35}k_{16} \oplus k_{71}k_{35}k_{16} \oplus \\
& k_{70}k_{69}k_{35}k_{16} \oplus k_{59}k_{35}k_{16} \oplus k_{58}k_{57}k_{35}k_{16} \oplus k_{53}k_{35}k_{16} \oplus k_{44}k_{35}k_{16} \oplus \\
& k_{36}k_{35}k_{16} \oplus k_{79}k_{78}k_{34}k_{16} \oplus k_{71}k_{34}k_{16} \oplus k_{70}k_{69}k_{34}k_{16} \oplus k_{59}k_{34}k_{16} \oplus \\
& k_{58}k_{57}k_{34}k_{16} \oplus k_{53}k_{34}k_{16} \oplus k_{44}k_{34}k_{16} \oplus k_{25}k_{16} \oplus k_{24}k_{16} \oplus k_{23}k_{16} \oplus k_{15} \oplus \\
& k_{72}k_{15} \oplus k_{71}k_{70}k_{15} \oplus k_{59}k_{15} \oplus k_{79}k_{78}k_{58}k_{15} \oplus k_{58}k_{57}k_{15} \oplus k_{58}k_{53}k_{15} \oplus \\
& k_{45}k_{15} \oplus k_{32}k_{15} \oplus k_{72}k_{14} \oplus k_{71}k_{14} \oplus k_{74}k_{71}k_{14} \oplus k_{73}k_{72}k_{71}k_{14} \oplus \\
& k_{71}k_{70}k_{14} \oplus k_{70}k_{69}k_{14} \oplus k_{74}k_{70}k_{69}k_{14} \oplus k_{73}k_{72}k_{70}k_{69}k_{14} \oplus k_{62}k_{14} \oplus \\
& k_{59}k_{14} \oplus k_{74}k_{59}k_{14} \oplus k_{73}k_{72}k_{59}k_{14} \oplus k_{58}k_{14} \oplus k_{74}k_{58}k_{14} \oplus k_{73}k_{72}k_{58}k_{14} \oplus \\
& k_{58}k_{57}k_{14} \oplus k_{74}k_{58}k_{57}k_{14} \oplus k_{73}k_{72}k_{58}k_{57}k_{14} \oplus k_{74}k_{54}k_{14} \oplus k_{73}k_{72}k_{54}k_{14} \oplus \\
& k_{71}k_{54}k_{14} \oplus k_{70}k_{69}k_{54}k_{14} \oplus k_{59}k_{54}k_{14} \oplus k_{58}k_{54}k_{14} \oplus k_{58}k_{57}k_{54}k_{14} \oplus \\
& k_{71}k_{47}k_{14} \oplus k_{70}k_{69}k_{47}k_{14} \oplus k_{59}k_{47}k_{14} \oplus k_{58}k_{47}k_{14} \oplus k_{58}k_{57}k_{47}k_{14} \oplus \\
& k_{54}k_{47}k_{14} \oplus k_{45}k_{14} \oplus k_{44}k_{14} \oplus k_{74}k_{44}k_{14} \oplus k_{73}k_{72}k_{44}k_{14} \oplus k_{54}k_{44}k_{14} \oplus \\
& k_{47}k_{44}k_{14} \oplus k_{74}k_{10} \oplus k_{73}k_{72}k_{10} \oplus k_{47}k_{10} \oplus k_{60}k_{44}k_{10} \oplus k_{60}k_{43}k_{42}k_{10} \oplus \\
& k_{60}k_{17}k_{10} \oplus k_{16}k_{10} \oplus k_9 \oplus k_{73}k_9 \oplus k_{72}k_{71}k_9 \oplus k_{61}k_9 \oplus k_{60}k_{59}k_9 \oplus k_{57}k_9 \oplus \\
& k_{46}k_9 \oplus k_{60}k_{57}k_{44}k_9 \oplus k_{60}k_{57}k_{43}k_{42}k_9 \oplus k_{34}k_9 \oplus k_{60}k_{57}k_{17}k_9 \oplus k_{79}k_{78}k_8 \oplus \\
& k_{71}k_8 \oplus k_{70}k_{69}k_8 \oplus k_{63}k_8 \oplus k_{79}k_{78}k_{63}k_8 \oplus k_{71}k_{63}k_8 \oplus k_{70}k_{69}k_{63}k_8 \oplus \\
& k_{79}k_{78}k_{62}k_8 \oplus k_{74}k_{62}k_8 \oplus k_{79}k_{78}k_{74}k_{62}k_8 \oplus k_{73}k_{62}k_8 \oplus k_{73}k_{72}k_{62}k_8 \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{62}k_8 \oplus k_{71}k_{62}k_8 \oplus k_{74}k_{71}k_{62}k_8 \oplus k_{72}k_{71}k_{62}k_8 \oplus \\
& k_{73}k_{72}k_{71}k_{62}k_8 \oplus k_{70}k_{69}k_{62}k_8 \oplus k_{74}k_{70}k_{69}k_{62}k_8 \oplus k_{73}k_{72}k_{70}k_{69}k_{62}k_8 \oplus \\
& k_{79}k_{78}k_{74}k_{61}k_8 \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_8 \oplus k_{74}k_{71}k_{61}k_8 \oplus k_{73}k_{72}k_{71}k_{61}k_8 \oplus \\
& k_{74}k_{70}k_{69}k_{61}k_8 \oplus k_{73}k_{72}k_{70}k_{69}k_{61}k_8 \oplus k_{61}k_{60}k_8 \oplus k_{74}k_{61}k_{60}k_8 \oplus \\
& k_{79}k_{78}k_{74}k_{61}k_{60}k_8 \oplus k_{73}k_{61}k_{60}k_8 \oplus k_{73}k_{72}k_{61}k_{60}k_8 \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{61}k_{60}k_8 \oplus k_{74}k_{71}k_{61}k_{60}k_8 \oplus k_{72}k_{71}k_{61}k_{60}k_8 \oplus \\
& k_{73}k_{72}k_{71}k_{61}k_{60}k_8 \oplus k_{74}k_{70}k_{69}k_{61}k_{60}k_8 \oplus k_{73}k_{72}k_{70}k_{69}k_{61}k_{60}k_8 \oplus k_{59}k_8 \oplus \\
& k_{63}k_{59}k_8 \oplus k_{62}k_{59}k_8 \oplus k_{74}k_{62}k_{59}k_8 \oplus k_{73}k_{72}k_{62}k_{59}k_8 \oplus k_{74}k_{61}k_{59}k_8 \oplus \\
& k_{73}k_{72}k_{61}k_{59}k_8 \oplus k_{60}k_{59}k_8 \oplus k_{79}k_{78}k_{60}k_{59}k_8 \oplus k_{74}k_{60}k_{59}k_8 \oplus \\
& k_{79}k_{78}k_{74}k_{60}k_{59}k_8 \oplus k_{73}k_{72}k_{60}k_{59}k_8 \oplus k_{79}k_{78}k_{73}k_{72}k_{60}k_{59}k_8 \oplus \\
& k_{71}k_{60}k_{59}k_8 \oplus k_{74}k_{71}k_{60}k_{59}k_8 \oplus k_{73}k_{72}k_{71}k_{60}k_{59}k_8 \oplus k_{70}k_{69}k_{60}k_{59}k_8 \oplus \\
& k_{74}k_{70}k_{69}k_{60}k_{59}k_8 \oplus k_{73}k_{72}k_{70}k_{69}k_{60}k_{59}k_8 \oplus k_{79}k_{78}k_{62}k_{60}k_{59}k_8 \oplus \\
& k_{71}k_{62}k_{60}k_{59}k_8 \oplus k_{70}k_{69}k_{62}k_{60}k_{59}k_8 \oplus k_{79}k_{78}k_{61}k_{60}k_{59}k_8 \oplus \\
& k_{74}k_{61}k_{60}k_{59}k_8 \oplus k_{73}k_{72}k_{61}k_{60}k_{59}k_8 \oplus k_{71}k_{61}k_{60}k_{59}k_8 \oplus \\
& k_{70}k_{69}k_{61}k_{60}k_{59}k_8 \oplus k_{63}k_{58}k_8 \oplus k_{62}k_{58}k_8 \oplus k_{74}k_{62}k_{58}k_8 \oplus \\
& k_{73}k_{72}k_{62}k_{58}k_8 \oplus k_{74}k_{61}k_{58}k_8 \oplus k_{73}k_{72}k_{61}k_{58}k_8 \oplus k_{74}k_{61}k_{60}k_{58}k_8 \oplus \\
& k_{73}k_{72}k_{61}k_{60}k_{58}k_8 \oplus k_{60}k_{59}k_{58}k_8 \oplus k_{74}k_{60}k_{59}k_{58}k_8 \oplus k_{73}k_{72}k_{60}k_{59}k_{58}k_8 \oplus \\
& k_{62}k_{60}k_{59}k_{58}k_8 \oplus k_{61}k_{60}k_{59}k_{58}k_8 \oplus k_{58}k_{57}k_8 \oplus k_{63}k_{58}k_{57}k_8 \oplus \\
& k_{62}k_{58}k_{57}k_8 \oplus k_{74}k_{62}k_{58}k_{57}k_8 \oplus k_{73}k_{72}k_{62}k_{58}k_{57}k_8 \oplus k_{74}k_{61}k_{58}k_{57}k_8 \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{73}k_{72}k_{61}k_{58}k_{57}k_8 \oplus k_{74}k_{61}k_{60}k_{58}k_{57}k_8 \oplus k_{73}k_{72}k_{61}k_{60}k_{58}k_{57}k_8 \oplus \\
& k_{60}k_{59}k_{58}k_{57}k_8 \oplus k_{74}k_{60}k_{59}k_{58}k_{57}k_8 \oplus k_{73}k_{72}k_{60}k_{59}k_{58}k_{57}k_8 \oplus \\
& k_{62}k_{60}k_{59}k_{58}k_{57}k_8 \oplus k_{61}k_{60}k_{59}k_{58}k_{57}k_8 \oplus k_{79}k_{78}k_{55}k_8 \oplus k_{71}k_{55}k_8 \oplus \\
& k_{70}k_{69}k_{55}k_8 \oplus k_{59}k_{55}k_8 \oplus k_{58}k_{55}k_8 \oplus k_{58}k_{57}k_{55}k_8 \oplus k_{53}k_8 \oplus k_{63}k_{53}k_8 \oplus \\
& k_{62}k_{53}k_8 \oplus k_{74}k_{62}k_{53}k_8 \oplus k_{73}k_{72}k_{62}k_{53}k_8 \oplus k_{74}k_{61}k_{53}k_8 \oplus \\
& k_{73}k_{72}k_{61}k_{53}k_8 \oplus k_{74}k_{61}k_{60}k_{53}k_8 \oplus k_{73}k_{72}k_{61}k_{60}k_{53}k_8 \oplus k_{60}k_{59}k_{53}k_8 \oplus \\
& k_{74}k_{60}k_{59}k_{53}k_8 \oplus k_{73}k_{72}k_{60}k_{59}k_{53}k_8 \oplus k_{62}k_{60}k_{59}k_{53}k_8 \oplus k_{61}k_{60}k_{59}k_{53}k_8 \oplus \\
& k_{55}k_{53}k_8 \oplus k_{48}k_8 \oplus k_{79}k_{78}k_{48}k_8 \oplus k_{71}k_{48}k_8 \oplus k_{70}k_{69}k_{48}k_8 \oplus k_{59}k_{48}k_8 \oplus \\
& k_{58}k_{48}k_8 \oplus k_{58}k_{57}k_{48}k_8 \oplus k_{53}k_{48}k_8 \oplus k_{62}k_{47}k_8 \oplus k_{79}k_{78}k_{62}k_{47}k_8 \oplus \\
& k_{71}k_{62}k_{47}k_8 \oplus k_{70}k_{69}k_{62}k_{47}k_8 \oplus k_{79}k_{78}k_{61}k_{47}k_8 \oplus k_{71}k_{61}k_{47}k_8 \oplus \\
& k_{70}k_{69}k_{61}k_{47}k_8 \oplus k_{61}k_{60}k_{47}k_8 \oplus k_{79}k_{78}k_{61}k_{60}k_{47}k_8 \oplus k_{71}k_{61}k_{60}k_{47}k_8 \oplus \\
& k_{70}k_{69}k_{61}k_{60}k_{47}k_8 \oplus k_{62}k_{59}k_{47}k_8 \oplus k_{61}k_{59}k_{47}k_8 \oplus k_{60}k_{59}k_{47}k_8 \oplus \\
& k_{79}k_{78}k_{60}k_{59}k_{47}k_8 \oplus k_{71}k_{60}k_{59}k_{47}k_8 \oplus k_{70}k_{69}k_{60}k_{59}k_{47}k_8 \oplus \\
& k_{61}k_{60}k_{59}k_{47}k_8 \oplus k_{62}k_{58}k_{47}k_8 \oplus k_{61}k_{58}k_{47}k_8 \oplus k_{61}k_{60}k_{58}k_{47}k_8 \oplus \\
& k_{60}k_{59}k_{58}k_{47}k_8 \oplus k_{62}k_{58}k_{57}k_{47}k_8 \oplus k_{61}k_{58}k_{57}k_{47}k_8 \oplus k_{61}k_{60}k_{58}k_{57}k_{47}k_8 \oplus \\
& k_{60}k_{59}k_{58}k_{57}k_{47}k_8 \oplus k_{62}k_{53}k_{47}k_8 \oplus k_{61}k_{53}k_{47}k_8 \oplus k_{61}k_{60}k_{53}k_{47}k_8 \oplus \\
& k_{60}k_{59}k_{53}k_{47}k_8 \oplus k_{62}k_{46}k_8 \oplus k_{61}k_{60}k_{46}k_8 \oplus k_{47}k_{46}k_8 \oplus k_{79}k_{78}k_{47}k_{46}k_8 \oplus \\
& k_{71}k_{47}k_{46}k_8 \oplus k_{70}k_{69}k_{47}k_{46}k_8 \oplus k_{59}k_{47}k_{46}k_8 \oplus k_{58}k_{47}k_{46}k_8 \oplus \\
& k_{58}k_{57}k_{47}k_{46}k_8 \oplus k_{53}k_{47}k_{46}k_8 \oplus k_{44}k_8 \oplus k_{63}k_{44}k_8 \oplus k_{62}k_{44}k_8 \oplus \\
& k_{74}k_{62}k_{44}k_8 \oplus k_{73}k_{72}k_{62}k_{44}k_8 \oplus k_{74}k_{61}k_{44}k_8 \oplus k_{73}k_{72}k_{61}k_{44}k_8 \oplus \\
& k_{74}k_{61}k_{60}k_{44}k_8 \oplus k_{73}k_{72}k_{61}k_{60}k_{44}k_8 \oplus k_{60}k_{59}k_{44}k_8 \oplus k_{74}k_{60}k_{59}k_{44}k_8 \oplus \\
& k_{73}k_{72}k_{60}k_{59}k_{44}k_8 \oplus k_{62}k_{60}k_{59}k_{44}k_8 \oplus k_{61}k_{60}k_{59}k_{44}k_8 \oplus k_{55}k_{44}k_8 \oplus \\
& k_{48}k_{44}k_8 \oplus k_{62}k_{47}k_{44}k_8 \oplus k_{61}k_{47}k_{44}k_8 \oplus k_{61}k_{60}k_{47}k_{44}k_8 \oplus \\
& k_{60}k_{59}k_{47}k_{44}k_8 \oplus k_{47}k_{46}k_{44}k_8 \oplus k_{36}k_8 \oplus k_{79}k_{78}k_{36}k_8 \oplus k_{71}k_{36}k_8 \oplus \\
& k_{70}k_{69}k_{36}k_8 \oplus k_{59}k_{36}k_8 \oplus k_{58}k_{36}k_8 \oplus k_{58}k_{57}k_{36}k_8 \oplus k_{53}k_{36}k_8 \oplus k_{44}k_{36}k_8 \oplus \\
& k_{79}k_{78}k_{35}k_8 \oplus k_{74}k_{35}k_8 \oplus k_{79}k_{78}k_{74}k_{35}k_8 \oplus k_{73}k_{35}k_8 \oplus k_{73}k_{72}k_{35}k_8 \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{35}k_8 \oplus k_{71}k_{35}k_8 \oplus k_{74}k_{71}k_{35}k_8 \oplus k_{72}k_{71}k_{35}k_8 \oplus \\
& k_{73}k_{72}k_{71}k_{35}k_8 \oplus k_{70}k_{69}k_{35}k_8 \oplus k_{74}k_{70}k_{69}k_{35}k_8 \oplus k_{73}k_{72}k_{70}k_{69}k_{35}k_8 \oplus \\
& k_{61}k_{35}k_8 \oplus k_{79}k_{78}k_{61}k_{35}k_8 \oplus k_{71}k_{61}k_{35}k_8 \oplus k_{70}k_{69}k_{61}k_{35}k_8 \oplus k_{59}k_{35}k_8 \oplus \\
& k_{74}k_{59}k_{35}k_8 \oplus k_{73}k_{72}k_{59}k_{35}k_8 \oplus k_{61}k_{59}k_{35}k_8 \oplus k_{79}k_{78}k_{60}k_{59}k_{35}k_8 \oplus \\
& k_{71}k_{60}k_{59}k_{35}k_8 \oplus k_{70}k_{69}k_{60}k_{59}k_{35}k_8 \oplus k_{58}k_{35}k_8 \oplus k_{74}k_{58}k_{35}k_8 \oplus \\
& k_{73}k_{72}k_{58}k_{35}k_8 \oplus k_{61}k_{58}k_{35}k_8 \oplus k_{60}k_{59}k_{58}k_{35}k_8 \oplus k_{58}k_{57}k_{35}k_8 \oplus \\
& k_{74}k_{58}k_{57}k_{35}k_8 \oplus k_{73}k_{72}k_{58}k_{57}k_{35}k_8 \oplus k_{61}k_{58}k_{57}k_{35}k_8 \oplus \\
& k_{60}k_{59}k_{58}k_{57}k_{35}k_8 \oplus k_{53}k_{35}k_8 \oplus k_{74}k_{53}k_{35}k_8 \oplus k_{73}k_{72}k_{53}k_{35}k_8 \oplus \\
& k_{61}k_{53}k_{35}k_8 \oplus k_{60}k_{59}k_{53}k_{35}k_8 \oplus k_{47}k_{35}k_8 \oplus k_{79}k_{78}k_{47}k_{35}k_8 \oplus \\
& k_{71}k_{47}k_{35}k_8 \oplus k_{70}k_{69}k_{47}k_{35}k_8 \oplus k_{59}k_{47}k_{35}k_8 \oplus k_{58}k_{47}k_{35}k_8 \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{58}k_{57}k_{47}k_{35}k_8 \oplus k_{53}k_{47}k_{35}k_8 \oplus k_{46}k_{35}k_8 \oplus k_{44}k_{35}k_8 \oplus k_{74}k_{44}k_{35}k_8 \oplus \\
& k_{73}k_{72}k_{44}k_{35}k_8 \oplus k_{61}k_{44}k_{35}k_8 \oplus k_{60}k_{59}k_{44}k_{35}k_8 \oplus k_{47}k_{44}k_{35}k_8 \oplus \\
& k_{79}k_{78}k_{34}k_8 \oplus k_{79}k_{78}k_{74}k_{34}k_8 \oplus k_{79}k_{78}k_{73}k_{72}k_{34}k_8 \oplus k_{71}k_{34}k_8 \oplus \\
& k_{74}k_{71}k_{34}k_8 \oplus k_{73}k_{72}k_{71}k_{34}k_8 \oplus k_{70}k_{69}k_{34}k_8 \oplus k_{74}k_{70}k_{69}k_{34}k_8 \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{34}k_8 \oplus k_{62}k_{34}k_8 \oplus k_{79}k_{78}k_{62}k_{34}k_8 \oplus k_{71}k_{62}k_{34}k_8 \oplus \\
& k_{70}k_{69}k_{62}k_{34}k_8 \oplus k_{61}k_{60}k_{34}k_8 \oplus k_{79}k_{78}k_{61}k_{60}k_{34}k_8 \oplus k_{71}k_{61}k_{60}k_{34}k_8 \oplus \\
& k_{70}k_{69}k_{61}k_{60}k_{34}k_8 \oplus k_{59}k_{34}k_8 \oplus k_{74}k_{59}k_{34}k_8 \oplus k_{73}k_{72}k_{59}k_{34}k_8 \oplus \\
& k_{62}k_{59}k_{34}k_8 \oplus k_{61}k_{60}k_{59}k_{34}k_8 \oplus k_{58}k_{34}k_8 \oplus k_{74}k_{58}k_{34}k_8 \oplus \\
& k_{73}k_{72}k_{58}k_{34}k_8 \oplus k_{62}k_{58}k_{34}k_8 \oplus k_{61}k_{60}k_{58}k_{34}k_8 \oplus k_{58}k_{57}k_{34}k_8 \oplus \\
& k_{74}k_{58}k_{57}k_{34}k_8 \oplus k_{73}k_{72}k_{58}k_{57}k_{34}k_8 \oplus k_{62}k_{58}k_{57}k_{34}k_8 \oplus \\
& k_{61}k_{60}k_{58}k_{57}k_{34}k_8 \oplus k_{53}k_{34}k_8 \oplus k_{74}k_{53}k_{34}k_8 \oplus k_{73}k_{72}k_{53}k_{34}k_8 \oplus \\
& k_{62}k_{53}k_{34}k_8 \oplus k_{61}k_{60}k_{53}k_{34}k_8 \oplus k_{79}k_{78}k_{47}k_{34}k_8 \oplus k_{71}k_{47}k_{34}k_8 \oplus \\
& k_{70}k_{69}k_{47}k_{34}k_8 \oplus k_{59}k_{47}k_{34}k_8 \oplus k_{58}k_{47}k_{34}k_8 \oplus k_{58}k_{57}k_{47}k_{34}k_8 \oplus \\
& k_{53}k_{47}k_{34}k_8 \oplus k_{44}k_{34}k_8 \oplus k_{74}k_{44}k_{34}k_8 \oplus k_{73}k_{72}k_{44}k_{34}k_8 \oplus k_{62}k_{44}k_{34}k_8 \oplus \\
& k_{61}k_{60}k_{44}k_{34}k_8 \oplus k_{47}k_{44}k_{34}k_8 \oplus k_{35}k_{34}k_8 \oplus k_{79}k_{78}k_{35}k_{34}k_8 \oplus \\
& k_{71}k_{35}k_{34}k_8 \oplus k_{70}k_{69}k_{35}k_{34}k_8 \oplus k_{59}k_{35}k_{34}k_8 \oplus k_{58}k_{35}k_{34}k_8 \oplus \\
& k_{58}k_{57}k_{35}k_{34}k_8 \oplus k_{53}k_{35}k_{34}k_8 \oplus k_{44}k_{35}k_{34}k_8 \oplus k_{21}k_8 \oplus k_{79}k_{78}k_{21}k_8 \oplus \\
& k_{71}k_{21}k_8 \oplus k_{70}k_{69}k_{21}k_8 \oplus k_{59}k_{21}k_8 \oplus k_{58}k_{21}k_8 \oplus k_{58}k_{57}k_{21}k_8 \oplus k_{53}k_{21}k_8 \oplus \\
& k_{44}k_{21}k_8 \oplus k_{74}k_{17}k_8 \oplus k_{73}k_{72}k_{17}k_8 \oplus k_{61}k_{17}k_8 \oplus k_{60}k_{59}k_{17}k_8 \oplus k_{47}k_{17}k_8 \oplus \\
& k_{34}k_{17}k_8 \oplus k_{79}k_{78}k_{16}k_8 \oplus k_{71}k_{16}k_8 \oplus k_{70}k_{69}k_{16}k_8 \oplus k_{59}k_{16}k_8 \oplus k_{58}k_{16}k_8 \oplus \\
& k_{58}k_{57}k_{16}k_8 \oplus k_{53}k_{16}k_8 \oplus k_{44}k_{16}k_8 \oplus k_{14}k_8 \oplus k_7 \oplus k_{78}k_7 \oplus k_{76}k_7 \oplus \\
& k_{77}k_{76}k_7 \oplus k_{74}k_7 \oplus k_{75}k_{74}k_7 \oplus k_{73}k_{72}k_7 \oplus k_{78}k_{63}k_7 \oplus k_{77}k_{76}k_{63}k_7 \oplus \\
& k_{78}k_{62}k_{61}k_7 \oplus k_{77}k_{76}k_{62}k_{61}k_7 \oplus k_{51}k_7 \oplus k_{63}k_{51}k_7 \oplus k_{62}k_{61}k_{51}k_7 \oplus k_{49}k_7 \oplus \\
& k_{47}k_7 \oplus k_{44}k_7 \oplus k_{78}k_{36}k_7 \oplus k_{77}k_{76}k_{36}k_7 \oplus k_{51}k_{36}k_7 \oplus k_{79}k_{78}k_6 \oplus k_{75}k_6 \oplus \\
& k_{74}k_{73}k_6 \oplus k_{73}k_{71}k_6 \oplus k_{72}k_{71}k_6 \oplus k_{73}k_{70}k_{69}k_6 \oplus k_{72}k_{71}k_{70}k_{69}k_6 \oplus k_{68}k_6 \oplus \\
& k_{62}k_6 \oplus k_{79}k_{78}k_{62}k_6 \oplus k_{71}k_{62}k_6 \oplus k_{70}k_{69}k_{62}k_6 \oplus k_{61}k_6 \oplus k_{79}k_{78}k_{61}k_6 \oplus \\
& k_{71}k_{61}k_6 \oplus k_{70}k_{69}k_{61}k_6 \oplus k_{60}k_6 \oplus k_{68}k_{60}k_6 \oplus k_{61}k_{60}k_6 \oplus k_{79}k_{78}k_{61}k_{60}k_6 \oplus \\
& k_{71}k_{61}k_{60}k_6 \oplus k_{70}k_{69}k_{61}k_{60}k_6 \oplus k_{73}k_{59}k_6 \oplus k_{72}k_{71}k_{59}k_6 \oplus k_{62}k_{59}k_6 \oplus \\
& k_{61}k_{59}k_6 \oplus k_{79}k_{78}k_{60}k_{59}k_6 \oplus k_{71}k_{60}k_{59}k_6 \oplus k_{70}k_{69}k_{60}k_{59}k_6 \oplus \\
& k_{61}k_{60}k_{59}k_6 \oplus k_{73}k_{58}k_6 \oplus k_{72}k_{71}k_{58}k_6 \oplus k_{62}k_{58}k_6 \oplus k_{61}k_{58}k_6 \oplus \\
& k_{61}k_{60}k_{58}k_6 \oplus k_{60}k_{59}k_{58}k_6 \oplus k_{73}k_{58}k_{57}k_6 \oplus k_{72}k_{71}k_{58}k_{57}k_6 \oplus \\
& k_{62}k_{58}k_{57}k_6 \oplus k_{61}k_{58}k_{57}k_6 \oplus k_{61}k_{60}k_{58}k_{57}k_6 \oplus k_{60}k_{59}k_{58}k_{57}k_6 \oplus k_{54}k_6 \oplus \\
& k_{62}k_{54}k_6 \oplus k_{61}k_{54}k_6 \oplus k_{61}k_{60}k_{54}k_6 \oplus k_{60}k_{59}k_{54}k_6 \oplus k_{53}k_6 \oplus k_{62}k_{53}k_6 \oplus \\
& k_{61}k_{53}k_6 \oplus k_{61}k_{60}k_{53}k_6 \oplus k_{60}k_{59}k_{53}k_6 \oplus k_{48}k_6 \oplus k_{71}k_{46}k_6 \oplus k_{70}k_{69}k_{46}k_6 \oplus \\
& k_{59}k_{46}k_6 \oplus k_{58}k_{46}k_6 \oplus k_{58}k_{57}k_{46}k_6 \oplus k_{73}k_{44}k_6 \oplus k_{72}k_{71}k_{44}k_6 \oplus k_{62}k_{44}k_6 \oplus \\
& k_{61}k_{44}k_6 \oplus k_{61}k_{60}k_{44}k_6 \oplus k_{60}k_{59}k_{44}k_6 \oplus k_{46}k_{44}k_6 \oplus k_{35}k_6 \oplus k_{79}k_{78}k_{35}k_6 \oplus
\end{aligned}$$



$$\begin{aligned}
& k_{71}k_{35}k_6 \oplus k_{70}k_{69}k_{35}k_6 \oplus k_{59}k_{35}k_6 \oplus k_{58}k_{35}k_6 \oplus k_{58}k_{57}k_{35}k_6 \oplus k_{54}k_{35}k_6 \oplus \\
& k_{53}k_{35}k_6 \oplus k_{44}k_{35}k_6 \oplus k_{34}k_6 \oplus k_{79}k_{78}k_{34}k_6 \oplus k_{71}k_{34}k_6 \oplus k_{70}k_{69}k_{34}k_6 \oplus \\
& k_{59}k_{34}k_6 \oplus k_{58}k_{34}k_6 \oplus k_{58}k_{57}k_{34}k_6 \oplus k_{54}k_{34}k_6 \oplus k_{53}k_{34}k_6 \oplus k_{44}k_{34}k_6 \oplus \\
& \textcolor{red}{k}_5 \oplus k_{63}k_{50}k_4 \oplus k_{62}k_{61}k_{50}k_4 \oplus k_{63}k_{49}k_{48}k_4 \oplus k_{62}k_{61}k_{49}k_{48}k_4 \oplus k_{50}k_{36}k_4 \oplus \\
& k_{49}k_{48}k_{36}k_4 \oplus k_{63}k_{23}k_4 \oplus k_{62}k_{61}k_{23}k_4 \oplus k_{36}k_{23}k_4 \oplus k_{71}k_2 \oplus k_{70}k_{69}k_2 \oplus \\
& k_{59}k_2 \oplus k_{58}k_2 \oplus k_{58}k_{57}k_2 \oplus k_{44}k_2
\end{aligned}$$

## 2 Superpoly $p_{I_7}$

Taking the cube of dimension 77 as

$$I_7 = \{0, 1, \dots, 71, 73, 74, 75, 77, 79\}, \quad IV[72] = IV[76] = IV[78] = 0,$$

we recover the superpoly  $p_{I_7}$  for 841-Round TRIVIUM that has 1400 terms, and we give it as the following

$$\begin{aligned} p_{I_7} & k_{79} \oplus k_{78} \oplus k_{79}k_{78} \oplus k_{77} \oplus k_{76} \oplus k_{79}k_{78}k_{76} \oplus k_{75} \oplus k_{77}k_{75} \oplus k_{78}k_{76}k_{75} \oplus \\ & k_{77}k_{76}k_{75} \oplus k_{74} \oplus k_{77}k_{74} \oplus k_{76}k_{74} \oplus k_{75}k_{74} \oplus k_{79}k_{78}k_{75}k_{74} \oplus k_{76}k_{75}k_{74} \oplus \\ & k_{73} \oplus k_{74}k_{73} \oplus k_{77}k_{74}k_{73} \oplus k_{76}k_{75}k_{74}k_{73} \oplus k_{72} \oplus k_{73}k_{72} \oplus k_{77}k_{73}k_{72} \oplus \\ & k_{76}k_{73}k_{72} \oplus k_{75}k_{73}k_{72} \oplus k_{76}k_{75}k_{73}k_{72} \oplus k_{74}k_{73}k_{72} \oplus k_{75}k_{74}k_{73}k_{72} \oplus k_{71} \oplus \\ & k_{79}k_{78}k_{71} \oplus k_{75}k_{71} \oplus k_{74}k_{71} \oplus k_{79}k_{78}k_{74}k_{71} \oplus k_{73}k_{71} \oplus k_{72}k_{71} \oplus \\ & k_{79}k_{78}k_{73}k_{72}k_{71} \oplus k_{71}k_{70} \oplus k_{73}k_{71}k_{70} \oplus k_{72}k_{71}k_{70} \oplus k_{69} \oplus k_{70}k_{69} \oplus \\ & k_{79}k_{78}k_{70}k_{69} \oplus k_{75}k_{70}k_{69} \oplus k_{74}k_{70}k_{69} \oplus k_{79}k_{78}k_{74}k_{70}k_{69} \oplus k_{73}k_{70}k_{69} \oplus \\ & k_{79}k_{78}k_{73}k_{72}k_{70}k_{69} \oplus k_{72}k_{71}k_{70}k_{69} \oplus k_{74}k_{72}k_{71}k_{70}k_{69} \oplus k_{73}k_{72}k_{71}k_{70}k_{69} \oplus \\ & k_{78}k_{68} \oplus k_{79}k_{78}k_{68} \oplus k_{76}k_{68} \oplus k_{77}k_{76}k_{68} \oplus k_{75}k_{74}k_{68} \oplus k_{71}k_{68} \oplus k_{70}k_{69}k_{68} \oplus \\ & k_{68}k_{67} \oplus k_{66} \oplus k_{68}k_{65} \oplus k_{67}k_{66}k_{65} \oplus k_{78}k_{64} \oplus k_{79}k_{78}k_{64} \oplus k_{77}k_{64} \oplus \\ & k_{77}k_{76}k_{64} \oplus k_{76}k_{75}k_{64} \oplus k_{74}k_{64} \oplus k_{73}k_{72}k_{64} \oplus k_{71}k_{64} \oplus k_{70}k_{69}k_{64} \oplus k_{65}k_{64} \oplus \\ & k_{71}k_{63} \oplus k_{70}k_{69}k_{63} \oplus k_{64}k_{63} \oplus k_{68}k_{64}k_{63} \oplus k_{67}k_{66}k_{64}k_{63} \oplus k_{79}k_{78}k_{62} \oplus \\ & k_{77}k_{62} \oplus k_{78}k_{77}k_{62} \oplus k_{77}k_{76}k_{62} \oplus k_{79}k_{77}k_{76}k_{62} \oplus k_{78}k_{77}k_{76}k_{62} \oplus \\ & k_{79}k_{78}k_{77}k_{76}k_{62} \oplus k_{75}k_{62} \oplus k_{77}k_{75}k_{74}k_{62} \oplus k_{76}k_{75}k_{74}k_{62} \oplus k_{74}k_{73}k_{62} \oplus \\ & k_{75}k_{71}k_{62} \oplus k_{73}k_{71}k_{62} \oplus k_{72}k_{71}k_{62} \oplus k_{74}k_{72}k_{71}k_{62} \oplus k_{75}k_{70}k_{69}k_{62} \oplus \\ & k_{73}k_{70}k_{69}k_{62} \oplus k_{73}k_{72}k_{70}k_{69}k_{62} \oplus k_{72}k_{71}k_{70}k_{69}k_{62} \oplus k_{74}k_{72}k_{71}k_{70}k_{69}k_{62} \oplus \\ & k_{73}k_{72}k_{71}k_{70}k_{69}k_{62} \oplus k_{66}k_{62} \oplus k_{64}k_{62} \oplus k_{65}k_{64}k_{62} \oplus k_{78}k_{63}k_{62} \oplus \\ & k_{79}k_{78}k_{63}k_{62} \oplus k_{77}k_{63}k_{62} \oplus k_{77}k_{76}k_{63}k_{62} \oplus k_{76}k_{75}k_{63}k_{62} \oplus k_{74}k_{63}k_{62} \oplus \\ & k_{73}k_{72}k_{63}k_{62} \oplus k_{71}k_{63}k_{62} \oplus k_{70}k_{69}k_{63}k_{62} \oplus k_{61} \oplus k_{75}k_{61} \oplus k_{74}k_{73}k_{61} \oplus \\ & k_{71}k_{61} \oplus k_{73}k_{71}k_{61} \oplus k_{72}k_{71}k_{61} \oplus k_{70}k_{69}k_{61} \oplus k_{73}k_{70}k_{69}k_{61} \oplus \\ & k_{72}k_{71}k_{70}k_{69}k_{61} \oplus k_{63}k_{61} \oplus k_{62}k_{61} \oplus k_{64}k_{62}k_{61} \oplus k_{63}k_{62}k_{61} \oplus k_{71}k_{60} \oplus \\ & k_{70}k_{69}k_{60} \oplus k_{71}k_{62}k_{60} \oplus k_{70}k_{69}k_{62}k_{60} \oplus k_{77}k_{61}k_{60} \oplus k_{75}k_{61}k_{60} \oplus \\ & k_{76}k_{75}k_{61}k_{60} \oplus k_{74}k_{73}k_{61}k_{60} \oplus k_{75}k_{71}k_{61}k_{60} \oplus k_{73}k_{71}k_{61}k_{60} \oplus k_{72}k_{71}k_{61}k_{60} \oplus \\ & k_{74}k_{72}k_{71}k_{61}k_{60} \oplus k_{75}k_{70}k_{69}k_{61}k_{60} \oplus k_{73}k_{70}k_{69}k_{61}k_{60} \oplus k_{73}k_{72}k_{70}k_{69}k_{61}k_{60} \oplus \\ & k_{72}k_{71}k_{70}k_{69}k_{61}k_{60} \oplus k_{74}k_{72}k_{71}k_{70}k_{69}k_{61}k_{60} \oplus k_{73}k_{72}k_{71}k_{70}k_{69}k_{61}k_{60} \oplus k_{59} \oplus \\ & k_{79}k_{78}k_{59} \oplus k_{75}k_{59} \oplus k_{74}k_{59} \oplus k_{79}k_{78}k_{74}k_{59} \oplus k_{79}k_{78}k_{73}k_{72}k_{59} \oplus \\ & k_{74}k_{72}k_{71}k_{59} \oplus k_{73}k_{72}k_{71}k_{59} \oplus k_{68}k_{59} \oplus k_{64}k_{59} \oplus k_{63}k_{59} \oplus k_{75}k_{62}k_{59} \oplus \\ & k_{73}k_{62}k_{59} \oplus k_{73}k_{72}k_{62}k_{59} \oplus k_{72}k_{71}k_{62}k_{59} \oplus k_{74}k_{72}k_{71}k_{62}k_{59} \oplus \\ & k_{73}k_{72}k_{71}k_{62}k_{59} \oplus k_{63}k_{62}k_{59} \oplus k_{61}k_{59} \oplus k_{73}k_{61}k_{59} \oplus k_{72}k_{71}k_{61}k_{59} \oplus k_{60}k_{59} \oplus \\ & k_{79}k_{78}k_{60}k_{59} \oplus k_{75}k_{60}k_{59} \oplus k_{73}k_{60}k_{59} \oplus k_{74}k_{73}k_{60}k_{59} \oplus k_{71}k_{60}k_{59} \oplus \end{aligned}$$

$$\begin{aligned}
& k_{73}k_{71}k_{60}k_{59} \oplus k_{70}k_{69}k_{60}k_{59} \oplus k_{73}k_{70}k_{69}k_{60}k_{59} \oplus k_{72}k_{71}k_{70}k_{69}k_{60}k_{59} \oplus \\
& k_{62}k_{60}k_{59} \oplus k_{71}k_{62}k_{60}k_{59} \oplus k_{70}k_{69}k_{62}k_{60}k_{59} \oplus k_{75}k_{61}k_{60}k_{59} \oplus k_{73}k_{61}k_{60}k_{59} \oplus \\
& k_{73}k_{72}k_{61}k_{60}k_{59} \oplus k_{71}k_{61}k_{60}k_{59} \oplus k_{72}k_{71}k_{61}k_{60}k_{59} \oplus k_{74}k_{72}k_{71}k_{61}k_{60}k_{59} \oplus \\
& k_{73}k_{72}k_{71}k_{61}k_{60}k_{59} \oplus k_{70}k_{69}k_{61}k_{60}k_{59} \oplus k_{79}k_{78}k_{58} \oplus k_{79}k_{78}k_{76}k_{58} \oplus \\
& k_{79}k_{78}k_{74}k_{58} \oplus k_{79}k_{78}k_{75}k_{74}k_{58} \oplus k_{74}k_{73}k_{58} \oplus k_{73}k_{72}k_{58} \oplus k_{79}k_{78}k_{73}k_{72}k_{58} \oplus \\
& k_{74}k_{72}k_{71}k_{58} \oplus k_{73}k_{72}k_{71}k_{58} \oplus k_{64}k_{58} \oplus k_{77}k_{64}k_{58} \oplus k_{76}k_{75}k_{64}k_{58} \oplus \\
& k_{74}k_{64}k_{58} \oplus k_{73}k_{72}k_{64}k_{58} \oplus k_{76}k_{62}k_{58} \oplus k_{75}k_{62}k_{58} \oplus k_{74}k_{62}k_{58} \oplus \\
& k_{74}k_{73}k_{62}k_{58} \oplus k_{72}k_{62}k_{58} \oplus k_{75}k_{73}k_{72}k_{62}k_{58} \oplus k_{74}k_{73}k_{72}k_{62}k_{58} \oplus \\
& k_{74}k_{72}k_{71}k_{62}k_{58} \oplus k_{73}k_{72}k_{71}k_{62}k_{58} \oplus k_{71}k_{70}k_{62}k_{58} \oplus k_{63}k_{62}k_{58} \oplus \\
& k_{77}k_{63}k_{62}k_{58} \oplus k_{76}k_{75}k_{63}k_{62}k_{58} \oplus k_{74}k_{63}k_{62}k_{58} \oplus k_{73}k_{72}k_{63}k_{62}k_{58} \oplus \\
& k_{72}k_{61}k_{58} \oplus k_{71}k_{70}k_{61}k_{58} \oplus k_{76}k_{61}k_{60}k_{58} \oplus k_{75}k_{61}k_{60}k_{58} \oplus k_{74}k_{61}k_{60}k_{58} \oplus \\
& k_{74}k_{73}k_{61}k_{60}k_{58} \oplus k_{72}k_{61}k_{60}k_{58} \oplus k_{75}k_{73}k_{72}k_{61}k_{60}k_{58} \oplus k_{74}k_{73}k_{72}k_{61}k_{60}k_{58} \oplus \\
& k_{74}k_{72}k_{71}k_{61}k_{60}k_{58} \oplus k_{73}k_{72}k_{71}k_{61}k_{60}k_{58} \oplus k_{71}k_{70}k_{61}k_{60}k_{58} \oplus k_{71}k_{59}k_{58} \oplus \\
& k_{70}k_{69}k_{59}k_{58} \oplus k_{62}k_{59}k_{58} \oplus k_{71}k_{62}k_{59}k_{58} \oplus k_{70}k_{69}k_{62}k_{59}k_{58} \oplus k_{61}k_{59}k_{58} \oplus \\
& k_{72}k_{60}k_{59}k_{58} \oplus k_{71}k_{70}k_{60}k_{59}k_{58} \oplus k_{61}k_{60}k_{59}k_{58} \oplus k_{71}k_{61}k_{60}k_{59}k_{58} \oplus \\
& k_{70}k_{69}k_{61}k_{60}k_{59}k_{58} \oplus k_{57} \oplus k_{79}k_{78}k_{57} \oplus k_{74}k_{57} \oplus k_{79}k_{78}k_{74}k_{57} \oplus k_{73}k_{57} \oplus \\
& k_{79}k_{78}k_{73}k_{57} \oplus k_{72}k_{57} \oplus k_{73}k_{72}k_{57} \oplus k_{79}k_{78}k_{73}k_{72}k_{57} \oplus k_{72}k_{71}k_{57} \oplus \\
& k_{79}k_{78}k_{72}k_{71}k_{57} \oplus k_{71}k_{70}k_{57} \oplus k_{74}k_{68}k_{57} \oplus k_{73}k_{72}k_{68}k_{57} \oplus k_{67}k_{57} \oplus \\
& k_{74}k_{67}k_{57} \oplus k_{73}k_{72}k_{67}k_{57} \oplus k_{64}k_{57} \oplus k_{67}k_{65}k_{64}k_{57} \oplus k_{74}k_{67}k_{65}k_{64}k_{57} \oplus \\
& k_{73}k_{72}k_{67}k_{65}k_{64}k_{57} \oplus k_{66}k_{65}k_{64}k_{57} \oplus k_{74}k_{66}k_{65}k_{64}k_{57} \oplus k_{73}k_{72}k_{66}k_{65}k_{64}k_{57} \oplus \\
& k_{63}k_{57} \oplus k_{79}k_{78}k_{63}k_{57} \oplus k_{79}k_{78}k_{74}k_{63}k_{57} \oplus k_{73}k_{63}k_{57} \oplus k_{79}k_{78}k_{73}k_{72}k_{63}k_{57} \oplus \\
& k_{72}k_{71}k_{63}k_{57} \oplus k_{75}k_{62}k_{57} \oplus k_{74}k_{62}k_{57} \oplus k_{73}k_{62}k_{57} \oplus k_{72}k_{62}k_{57} \oplus \\
& k_{72}k_{71}k_{62}k_{57} \oplus k_{74}k_{72}k_{71}k_{62}k_{57} \oplus k_{73}k_{72}k_{71}k_{62}k_{57} \oplus k_{71}k_{70}k_{62}k_{57} \oplus \\
& k_{63}k_{62}k_{57} \oplus k_{61}k_{57} \oplus k_{74}k_{61}k_{57} \oplus k_{79}k_{78}k_{74}k_{61}k_{57} \oplus k_{73}k_{61}k_{57} \oplus k_{72}k_{61}k_{57} \oplus \\
& k_{73}k_{72}k_{61}k_{57} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{57} \oplus k_{72}k_{71}k_{61}k_{57} \oplus k_{71}k_{70}k_{61}k_{57} \oplus \\
& k_{62}k_{61}k_{57} \oplus k_{62}k_{60}k_{57} \oplus k_{61}k_{60}k_{57} \oplus k_{79}k_{78}k_{61}k_{60}k_{57} \oplus k_{75}k_{61}k_{60}k_{57} \oplus \\
& k_{74}k_{61}k_{60}k_{57} \oplus k_{79}k_{78}k_{74}k_{61}k_{60}k_{57} \oplus k_{72}k_{61}k_{60}k_{57} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{60}k_{57} \oplus \\
& k_{74}k_{72}k_{71}k_{61}k_{60}k_{57} \oplus k_{73}k_{72}k_{71}k_{61}k_{60}k_{57} \oplus k_{71}k_{70}k_{61}k_{60}k_{57} \oplus k_{59}k_{57} \oplus \\
& k_{74}k_{60}k_{59}k_{57} \oplus k_{73}k_{60}k_{59}k_{57} \oplus k_{72}k_{60}k_{59}k_{57} \oplus k_{73}k_{72}k_{60}k_{59}k_{57} \oplus \\
& k_{72}k_{71}k_{60}k_{59}k_{57} \oplus k_{71}k_{70}k_{60}k_{59}k_{57} \oplus k_{62}k_{60}k_{59}k_{57} \oplus k_{79}k_{78}k_{62}k_{60}k_{59}k_{57} \oplus \\
& k_{79}k_{78}k_{74}k_{62}k_{60}k_{59}k_{57} \oplus k_{73}k_{62}k_{60}k_{59}k_{57} \oplus k_{79}k_{78}k_{73}k_{72}k_{62}k_{60}k_{59}k_{57} \oplus \\
& k_{72}k_{71}k_{62}k_{60}k_{59}k_{57} \oplus k_{79}k_{78}k_{61}k_{60}k_{59}k_{57} \oplus k_{79}k_{78}k_{74}k_{61}k_{60}k_{59}k_{57} \oplus \\
& k_{73}k_{61}k_{60}k_{59}k_{57} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{60}k_{59}k_{57} \oplus k_{72}k_{71}k_{61}k_{60}k_{59}k_{57} \oplus k_{58}k_{57} \oplus \\
& k_{79}k_{78}k_{58}k_{57} \oplus k_{75}k_{58}k_{57} \oplus k_{74}k_{58}k_{57} \oplus k_{79}k_{78}k_{74}k_{58}k_{57} \oplus k_{73}k_{58}k_{57} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{58}k_{57} \oplus k_{72}k_{71}k_{58}k_{57} \oplus k_{74}k_{72}k_{71}k_{58}k_{57} \oplus k_{73}k_{72}k_{71}k_{58}k_{57} \oplus \\
& k_{68}k_{58}k_{57} \oplus k_{64}k_{58}k_{57} \oplus k_{63}k_{58}k_{57} \oplus k_{75}k_{62}k_{58}k_{57} \oplus k_{73}k_{62}k_{58}k_{57} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{73}k_{72}k_{62}k_{58}k_{57} \oplus k_{72}k_{71}k_{62}k_{58}k_{57} \oplus k_{74}k_{72}k_{71}k_{62}k_{58}k_{57} \oplus \\
& k_{73}k_{72}k_{71}k_{62}k_{58}k_{57} \oplus k_{63}k_{62}k_{58}k_{57} \oplus k_{61}k_{58}k_{57} \oplus k_{73}k_{61}k_{58}k_{57} \oplus \\
& k_{72}k_{71}k_{61}k_{58}k_{57} \oplus k_{60}k_{58}k_{57} \oplus k_{62}k_{60}k_{58}k_{57} \oplus k_{75}k_{61}k_{60}k_{58}k_{57} \oplus \\
& k_{73}k_{61}k_{60}k_{58}k_{57} \oplus k_{73}k_{72}k_{61}k_{60}k_{58}k_{57} \oplus k_{72}k_{71}k_{61}k_{60}k_{58}k_{57} \oplus \\
& k_{74}k_{72}k_{71}k_{61}k_{60}k_{58}k_{57} \oplus k_{73}k_{72}k_{71}k_{61}k_{60}k_{58}k_{57} \oplus k_{59}k_{58}k_{57} \oplus k_{60}k_{59}k_{58}k_{57} \oplus \\
& k_{73}k_{60}k_{59}k_{58}k_{57} \oplus k_{72}k_{71}k_{60}k_{59}k_{58}k_{57} \oplus k_{62}k_{60}k_{59}k_{58}k_{57} \oplus k_{61}k_{60}k_{59}k_{58}k_{57} \oplus \\
& k_{61}k_{56} \oplus k_{61}k_{55} \oplus k_{60}k_{59}k_{55} \oplus k_{57}k_{55} \oplus k_{79}k_{78}k_{74}k_{57}k_{55} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{57}k_{55} \oplus k_{62}k_{57}k_{55} \oplus k_{61}k_{57}k_{55} \oplus k_{61}k_{60}k_{57}k_{55} \oplus k_{60}k_{59}k_{57}k_{55} \oplus \\
& k_{56}k_{55} \oplus k_{57}k_{54} \oplus k_{73}k_{57}k_{54} \oplus k_{72}k_{71}k_{57}k_{54} \oplus k_{63}k_{57}k_{54} \oplus k_{62}k_{57}k_{54} \oplus \\
& k_{74}k_{62}k_{57}k_{54} \oplus k_{73}k_{72}k_{62}k_{57}k_{54} \oplus k_{61}k_{57}k_{54} \oplus k_{74}k_{61}k_{57}k_{54} \oplus \\
& k_{73}k_{72}k_{61}k_{57}k_{54} \oplus k_{74}k_{61}k_{60}k_{57}k_{54} \oplus k_{73}k_{72}k_{61}k_{60}k_{57}k_{54} \oplus k_{60}k_{59}k_{57}k_{54} \oplus \\
& k_{74}k_{60}k_{59}k_{57}k_{54} \oplus k_{73}k_{72}k_{60}k_{59}k_{57}k_{54} \oplus k_{62}k_{60}k_{59}k_{57}k_{54} \oplus k_{61}k_{60}k_{59}k_{57}k_{54} \oplus \\
& k_{53} \oplus k_{76}k_{53} \oplus k_{75}k_{74}k_{53} \oplus k_{71}k_{53} \oplus k_{74}k_{71}k_{53} \oplus k_{73}k_{72}k_{71}k_{53} \oplus k_{70}k_{69}k_{53} \oplus \\
& k_{74}k_{70}k_{69}k_{53} \oplus k_{73}k_{72}k_{70}k_{69}k_{53} \oplus k_{68}k_{53} \oplus k_{64}k_{53} \oplus k_{62}k_{53} \oplus k_{78}k_{62}k_{53} \oplus \\
& k_{77}k_{76}k_{62}k_{53} \oplus k_{63}k_{62}k_{53} \oplus k_{59}k_{53} \oplus k_{74}k_{59}k_{53} \oplus k_{73}k_{72}k_{59}k_{53} \oplus k_{60}k_{59}k_{53} \oplus \\
& k_{58}k_{53} \oplus k_{76}k_{58}k_{53} \oplus k_{74}k_{58}k_{53} \oplus k_{75}k_{74}k_{58}k_{53} \oplus k_{73}k_{72}k_{58}k_{53} \oplus k_{73}k_{57}k_{53} \oplus \\
& k_{72}k_{71}k_{57}k_{53} \oplus k_{63}k_{57}k_{53} \oplus k_{74}k_{63}k_{57}k_{53} \oplus k_{73}k_{72}k_{63}k_{57}k_{53} \oplus k_{74}k_{61}k_{57}k_{53} \oplus \\
& k_{73}k_{72}k_{61}k_{57}k_{53} \oplus k_{61}k_{60}k_{57}k_{53} \oplus k_{74}k_{61}k_{60}k_{57}k_{53} \oplus k_{73}k_{72}k_{61}k_{60}k_{57}k_{53} \oplus \\
& k_{62}k_{60}k_{59}k_{57}k_{53} \oplus k_{74}k_{62}k_{60}k_{59}k_{57}k_{53} \oplus k_{73}k_{72}k_{62}k_{60}k_{59}k_{57}k_{53} \oplus \\
& k_{61}k_{60}k_{59}k_{57}k_{53} \oplus k_{74}k_{61}k_{60}k_{59}k_{57}k_{53} \oplus k_{73}k_{72}k_{61}k_{60}k_{59}k_{57}k_{53} \oplus k_{58}k_{57}k_{53} \oplus \\
& k_{74}k_{58}k_{57}k_{53} \oplus k_{73}k_{72}k_{58}k_{57}k_{53} \oplus k_{74}k_{57}k_{55}k_{53} \oplus k_{73}k_{72}k_{57}k_{55}k_{53} \oplus k_{52} \oplus \\
& k_{78}k_{62}k_{52} \oplus k_{77}k_{76}k_{62}k_{52} \oplus k_{77}k_{51} \oplus k_{76}k_{75}k_{51} \oplus k_{68}k_{51} \oplus k_{64}k_{51} \oplus \\
& k_{79}k_{62}k_{51} \oplus k_{79}k_{78}k_{62}k_{51} \oplus k_{78}k_{77}k_{62}k_{51} \oplus k_{63}k_{62}k_{51} \oplus k_{62}k_{53}k_{51} \oplus \\
& k_{62}k_{52}k_{51} \oplus k_{57}k_{52}k_{51} \oplus k_{74}k_{57}k_{52}k_{51} \oplus k_{73}k_{72}k_{57}k_{52}k_{51} \oplus k_{78}k_{50} \oplus \\
& k_{77}k_{76}k_{50} \oplus k_{75}k_{50} \oplus k_{74}k_{50} \oplus k_{74}k_{73}k_{50} \oplus k_{73}k_{72}k_{50} \oplus k_{64}k_{50} \oplus k_{62}k_{50} \oplus \\
& k_{76}k_{62}k_{50} \oplus k_{75}k_{74}k_{62}k_{50} \oplus k_{63}k_{62}k_{50} \oplus k_{61}k_{60}k_{50} \oplus k_{64}k_{58}k_{50} \oplus \\
& k_{63}k_{62}k_{58}k_{50} \oplus k_{51}k_{50} \oplus k_{49} \oplus k_{79}k_{78}k_{49} \oplus k_{75}k_{49} \oplus k_{74}k_{49} \oplus k_{74}k_{73}k_{49} \oplus \\
& k_{73}k_{72}k_{49} \oplus k_{68}k_{49} \oplus k_{77}k_{62}k_{49} \oplus k_{76}k_{75}k_{62}k_{49} \oplus k_{79}k_{78}k_{58}k_{49} \oplus k_{62}k_{58}k_{49} \oplus \\
& k_{61}k_{60}k_{58}k_{49} \oplus k_{53}k_{49} \oplus k_{58}k_{53}k_{49} \oplus k_{50}k_{49} \oplus k_{62}k_{50}k_{49} \oplus k_{77}k_{48} \oplus k_{75}k_{48} \oplus \\
& k_{76}k_{75}k_{48} \oplus k_{74}k_{48} \oplus k_{74}k_{73}k_{48} \oplus k_{73}k_{72}k_{48} \oplus k_{62}k_{48} \oplus k_{71}k_{62}k_{48} \oplus \\
& k_{70}k_{69}k_{62}k_{48} \oplus k_{61}k_{48} \oplus k_{61}k_{60}k_{48} \oplus k_{71}k_{61}k_{60}k_{48} \oplus k_{70}k_{69}k_{61}k_{60}k_{48} \oplus \\
& k_{62}k_{59}k_{48} \oplus k_{60}k_{59}k_{48} \oplus k_{61}k_{60}k_{59}k_{48} \oplus k_{62}k_{58}k_{48} \oplus k_{74}k_{62}k_{58}k_{48} \oplus \\
& k_{73}k_{72}k_{62}k_{58}k_{48} \oplus k_{61}k_{60}k_{58}k_{48} \oplus k_{74}k_{61}k_{60}k_{58}k_{48} \oplus k_{73}k_{72}k_{61}k_{60}k_{58}k_{48} \oplus \\
& k_{57}k_{48} \oplus k_{79}k_{78}k_{57}k_{48} \oplus k_{79}k_{78}k_{74}k_{57}k_{48} \oplus k_{73}k_{57}k_{48} \oplus k_{79}k_{78}k_{73}k_{72}k_{57}k_{48} \oplus \\
& k_{72}k_{71}k_{57}k_{48} \oplus k_{62}k_{57}k_{48} \oplus k_{61}k_{60}k_{57}k_{48} \oplus k_{62}k_{58}k_{57}k_{48} \oplus k_{61}k_{60}k_{58}k_{57}k_{48} \oplus \\
& k_{57}k_{54}k_{48} \oplus k_{57}k_{53}k_{48} \oplus k_{74}k_{57}k_{53}k_{48} \oplus k_{73}k_{72}k_{57}k_{53}k_{48} \oplus k_{50}k_{48} \oplus k_{47} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{77}k_{47} \oplus k_{76}k_{47} \oplus k_{75}k_{47} \oplus k_{76}k_{75}k_{47} \oplus k_{75}k_{74}k_{47} \oplus k_{73}k_{47} \oplus k_{74}k_{73}k_{47} \oplus \\
& k_{71}k_{47} \oplus k_{79}k_{78}k_{71}k_{47} \oplus k_{73}k_{71}k_{47} \oplus k_{70}k_{69}k_{47} \oplus k_{79}k_{78}k_{70}k_{69}k_{47} \oplus \\
& k_{73}k_{70}k_{69}k_{47} \oplus k_{72}k_{71}k_{70}k_{69}k_{47} \oplus k_{64}k_{47} \oplus k_{73}k_{71}k_{62}k_{47} \oplus k_{72}k_{71}k_{62}k_{47} \oplus \\
& k_{73}k_{70}k_{69}k_{62}k_{47} \oplus k_{72}k_{71}k_{70}k_{69}k_{62}k_{47} \oplus k_{63}k_{62}k_{47} \oplus k_{73}k_{71}k_{61}k_{60}k_{47} \oplus \\
& k_{72}k_{71}k_{61}k_{60}k_{47} \oplus k_{73}k_{70}k_{69}k_{61}k_{60}k_{47} \oplus k_{72}k_{71}k_{70}k_{69}k_{61}k_{60}k_{47} \oplus k_{59}k_{47} \oplus \\
& k_{79}k_{78}k_{59}k_{47} \oplus k_{73}k_{59}k_{47} \oplus k_{72}k_{71}k_{59}k_{47} \oplus k_{73}k_{62}k_{59}k_{47} \oplus k_{72}k_{71}k_{62}k_{59}k_{47} \oplus \\
& k_{73}k_{61}k_{60}k_{59}k_{47} \oplus k_{72}k_{71}k_{61}k_{60}k_{59}k_{47} \oplus k_{79}k_{78}k_{58}k_{47} \oplus k_{73}k_{58}k_{47} \oplus \\
& k_{72}k_{71}k_{58}k_{47} \oplus k_{64}k_{58}k_{47} \oplus k_{62}k_{58}k_{47} \oplus k_{75}k_{62}k_{58}k_{47} \oplus k_{73}k_{62}k_{58}k_{47} \oplus \\
& k_{74}k_{73}k_{62}k_{58}k_{47} \oplus k_{72}k_{71}k_{62}k_{58}k_{47} \oplus k_{63}k_{62}k_{58}k_{47} \oplus k_{61}k_{60}k_{58}k_{47} \oplus \\
& k_{75}k_{61}k_{60}k_{58}k_{47} \oplus k_{73}k_{61}k_{60}k_{58}k_{47} \oplus k_{74}k_{73}k_{61}k_{60}k_{58}k_{47} \oplus \\
& k_{72}k_{71}k_{61}k_{60}k_{58}k_{47} \oplus k_{57}k_{47} \oplus k_{79}k_{78}k_{57}k_{47} \oplus k_{68}k_{57}k_{47} \oplus k_{67}k_{57}k_{47} \oplus \\
& k_{67}k_{65}k_{64}k_{57}k_{47} \oplus k_{66}k_{65}k_{64}k_{57}k_{47} \oplus k_{79}k_{78}k_{63}k_{57}k_{47} \oplus k_{62}k_{57}k_{47} \oplus \\
& k_{73}k_{62}k_{57}k_{47} \oplus k_{72}k_{71}k_{62}k_{57}k_{47} \oplus k_{61}k_{57}k_{47} \oplus k_{79}k_{78}k_{61}k_{57}k_{47} \oplus \\
& k_{61}k_{60}k_{57}k_{47} \oplus k_{79}k_{78}k_{61}k_{60}k_{57}k_{47} \oplus k_{73}k_{61}k_{60}k_{57}k_{47} \oplus k_{72}k_{71}k_{61}k_{60}k_{57}k_{47} \oplus \\
& k_{60}k_{59}k_{57}k_{47} \oplus k_{79}k_{78}k_{62}k_{60}k_{59}k_{57}k_{47} \oplus k_{79}k_{78}k_{61}k_{60}k_{59}k_{57}k_{47} \oplus k_{58}k_{57}k_{47} \oplus \\
& k_{79}k_{78}k_{58}k_{57}k_{47} \oplus k_{73}k_{58}k_{57}k_{47} \oplus k_{72}k_{71}k_{58}k_{57}k_{47} \oplus k_{73}k_{62}k_{58}k_{57}k_{47} \oplus \\
& k_{72}k_{71}k_{62}k_{58}k_{57}k_{47} \oplus k_{73}k_{61}k_{60}k_{58}k_{57}k_{47} \oplus k_{72}k_{71}k_{61}k_{60}k_{58}k_{57}k_{47} \oplus \\
& k_{79}k_{78}k_{57}k_{55}k_{47} \oplus k_{62}k_{57}k_{54}k_{47} \oplus k_{61}k_{57}k_{54}k_{47} \oplus k_{61}k_{60}k_{57}k_{54}k_{47} \oplus \\
& k_{60}k_{59}k_{57}k_{54}k_{47} \oplus k_{71}k_{53}k_{47} \oplus k_{70}k_{69}k_{53}k_{47} \oplus k_{59}k_{53}k_{47} \oplus k_{58}k_{53}k_{47} \oplus \\
& k_{63}k_{57}k_{53}k_{47} \oplus k_{61}k_{57}k_{53}k_{47} \oplus k_{61}k_{60}k_{57}k_{53}k_{47} \oplus k_{62}k_{60}k_{59}k_{57}k_{53}k_{47} \oplus \\
& k_{61}k_{60}k_{59}k_{57}k_{53}k_{47} \oplus k_{58}k_{57}k_{53}k_{47} \oplus k_{57}k_{55}k_{53}k_{47} \oplus k_{57}k_{52}k_{51}k_{47} \oplus k_{50}k_{47} \oplus \\
& k_{49}k_{47} \oplus k_{75}k_{48}k_{47} \oplus k_{74}k_{73}k_{48}k_{47} \oplus k_{62}k_{58}k_{48}k_{47} \oplus k_{61}k_{60}k_{58}k_{48}k_{47} \oplus \\
& k_{79}k_{78}k_{57}k_{48}k_{47} \oplus k_{57}k_{53}k_{48}k_{47} \oplus k_{46} \oplus k_{74}k_{46} \oplus k_{72}k_{46} \oplus k_{73}k_{72}k_{46} \oplus \\
& k_{71}k_{46} \oplus k_{74}k_{71}k_{46} \oplus k_{73}k_{72}k_{71}k_{46} \oplus k_{71}k_{70}k_{46} \oplus k_{70}k_{69}k_{46} \oplus k_{74}k_{70}k_{69}k_{46} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{46} \oplus k_{71}k_{62}k_{46} \oplus k_{74}k_{71}k_{62}k_{46} \oplus k_{73}k_{72}k_{71}k_{62}k_{46} \oplus \\
& k_{70}k_{69}k_{62}k_{46} \oplus k_{74}k_{70}k_{69}k_{62}k_{46} \oplus k_{73}k_{72}k_{70}k_{69}k_{62}k_{46} \oplus k_{71}k_{61}k_{46} \oplus \\
& k_{70}k_{69}k_{61}k_{46} \oplus k_{71}k_{61}k_{60}k_{46} \oplus k_{74}k_{71}k_{61}k_{60}k_{46} \oplus k_{73}k_{72}k_{71}k_{61}k_{60}k_{46} \oplus \\
& k_{70}k_{69}k_{61}k_{60}k_{46} \oplus k_{74}k_{70}k_{69}k_{61}k_{60}k_{46} \oplus k_{73}k_{72}k_{70}k_{69}k_{61}k_{60}k_{46} \oplus k_{74}k_{59}k_{46} \oplus \\
& k_{73}k_{72}k_{59}k_{46} \oplus k_{62}k_{59}k_{46} \oplus k_{74}k_{62}k_{59}k_{46} \oplus k_{73}k_{72}k_{62}k_{59}k_{46} \oplus k_{61}k_{59}k_{46} \oplus \\
& k_{60}k_{59}k_{46} \oplus k_{71}k_{60}k_{59}k_{46} \oplus k_{70}k_{69}k_{60}k_{59}k_{46} \oplus k_{61}k_{60}k_{59}k_{46} \oplus \\
& k_{74}k_{61}k_{60}k_{59}k_{46} \oplus k_{73}k_{72}k_{61}k_{60}k_{59}k_{46} \oplus k_{74}k_{58}k_{46} \oplus k_{73}k_{72}k_{58}k_{46} \oplus \\
& k_{74}k_{62}k_{58}k_{46} \oplus k_{73}k_{72}k_{62}k_{58}k_{46} \oplus k_{74}k_{61}k_{60}k_{58}k_{46} \oplus k_{73}k_{72}k_{61}k_{60}k_{58}k_{46} \oplus \\
& k_{57}k_{46} \oplus k_{79}k_{78}k_{57}k_{46} \oplus k_{63}k_{57}k_{46} \oplus k_{62}k_{57}k_{46} \oplus k_{74}k_{62}k_{57}k_{46} \oplus \\
& k_{73}k_{72}k_{62}k_{57}k_{46} \oplus k_{61}k_{57}k_{46} \oplus k_{74}k_{61}k_{60}k_{57}k_{46} \oplus k_{73}k_{72}k_{61}k_{60}k_{57}k_{46} \oplus \\
& k_{60}k_{59}k_{57}k_{46} \oplus k_{62}k_{60}k_{59}k_{57}k_{46} \oplus k_{61}k_{60}k_{59}k_{57}k_{46} \oplus k_{58}k_{57}k_{46} \oplus \\
& k_{74}k_{58}k_{57}k_{46} \oplus k_{73}k_{72}k_{58}k_{57}k_{46} \oplus k_{62}k_{58}k_{57}k_{46} \oplus k_{74}k_{62}k_{58}k_{57}k_{46} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{73}k_{72}k_{62}k_{58}k_{57}k_{46} \oplus k_{61}k_{58}k_{57}k_{46} \oplus k_{61}k_{60}k_{58}k_{57}k_{46} \oplus k_{74}k_{61}k_{60}k_{58}k_{57}k_{46} \oplus \\
& k_{73}k_{72}k_{61}k_{60}k_{58}k_{57}k_{46} \oplus k_{60}k_{59}k_{58}k_{57}k_{46} \oplus k_{57}k_{54}k_{46} \oplus k_{57}k_{53}k_{46} \oplus \\
& k_{57}k_{48}k_{46} \oplus k_{75}k_{47}k_{46} \oplus k_{74}k_{73}k_{47}k_{46} \oplus k_{71}k_{62}k_{47}k_{46} \oplus k_{70}k_{69}k_{62}k_{47}k_{46} \oplus \\
& k_{71}k_{61}k_{60}k_{47}k_{46} \oplus k_{70}k_{69}k_{61}k_{60}k_{47}k_{46} \oplus k_{62}k_{59}k_{47}k_{46} \oplus k_{61}k_{60}k_{59}k_{47}k_{46} \oplus \\
& k_{58}k_{47}k_{46} \oplus k_{62}k_{58}k_{47}k_{46} \oplus k_{61}k_{60}k_{58}k_{47}k_{46} \oplus k_{79}k_{78}k_{74}k_{57}k_{47}k_{46} \oplus \\
& k_{73}k_{57}k_{47}k_{46} \oplus k_{79}k_{78}k_{73}k_{72}k_{57}k_{47}k_{46} \oplus k_{72}k_{71}k_{57}k_{47}k_{46} \oplus k_{62}k_{57}k_{47}k_{46} \oplus \\
& k_{61}k_{60}k_{57}k_{47}k_{46} \oplus k_{62}k_{58}k_{57}k_{47}k_{46} \oplus k_{61}k_{60}k_{58}k_{57}k_{47}k_{46} \oplus k_{57}k_{54}k_{47}k_{46} \oplus \\
& k_{74}k_{57}k_{53}k_{47}k_{46} \oplus k_{73}k_{72}k_{57}k_{53}k_{47}k_{46} \oplus k_{48}k_{47}k_{46} \oplus k_{45} \oplus k_{73}k_{45} \oplus \\
& k_{72}k_{71}k_{45} \oplus k_{62}k_{58}k_{45} \oplus k_{61}k_{58}k_{45} \oplus k_{61}k_{60}k_{58}k_{45} \oplus k_{60}k_{59}k_{58}k_{45} \oplus k_{57}k_{45} \oplus \\
& k_{62}k_{57}k_{45} \oplus k_{61}k_{57}k_{45} \oplus k_{61}k_{60}k_{57}k_{45} \oplus k_{60}k_{59}k_{57}k_{45} \oplus k_{46}k_{45} \oplus k_{79}k_{78}k_{44} \oplus \\
& k_{75}k_{44} \oplus k_{74}k_{44} \oplus k_{79}k_{78}k_{74}k_{44} \oplus k_{73}k_{44} \oplus k_{79}k_{78}k_{73}k_{72}k_{44} \oplus k_{72}k_{71}k_{44} \oplus \\
& k_{74}k_{72}k_{71}k_{44} \oplus k_{73}k_{72}k_{71}k_{44} \oplus k_{68}k_{44} \oplus k_{64}k_{44} \oplus k_{63}k_{44} \oplus k_{75}k_{62}k_{44} \oplus \\
& k_{73}k_{62}k_{44} \oplus k_{73}k_{72}k_{62}k_{44} \oplus k_{72}k_{71}k_{62}k_{44} \oplus k_{74}k_{72}k_{71}k_{62}k_{44} \oplus \\
& k_{73}k_{72}k_{71}k_{62}k_{44} \oplus k_{63}k_{62}k_{44} \oplus k_{61}k_{44} \oplus k_{73}k_{61}k_{44} \oplus k_{72}k_{71}k_{61}k_{44} \oplus k_{60}k_{44} \oplus \\
& k_{62}k_{60}k_{44} \oplus k_{75}k_{61}k_{60}k_{44} \oplus k_{73}k_{61}k_{60}k_{44} \oplus k_{73}k_{72}k_{61}k_{60}k_{44} \oplus \\
& k_{72}k_{71}k_{61}k_{60}k_{44} \oplus k_{74}k_{72}k_{71}k_{61}k_{60}k_{44} \oplus k_{73}k_{72}k_{71}k_{61}k_{60}k_{44} \oplus k_{60}k_{59}k_{44} \oplus \\
& k_{73}k_{60}k_{59}k_{44} \oplus k_{72}k_{71}k_{60}k_{59}k_{44} \oplus k_{62}k_{60}k_{59}k_{44} \oplus k_{61}k_{60}k_{59}k_{44} \oplus k_{59}k_{58}k_{44} \oplus \\
& k_{62}k_{59}k_{58}k_{44} \oplus k_{61}k_{60}k_{59}k_{58}k_{44} \oplus k_{53}k_{44} \oplus k_{74}k_{53}k_{44} \oplus k_{73}k_{72}k_{53}k_{44} \oplus \\
& k_{62}k_{48}k_{44} \oplus k_{61}k_{60}k_{48}k_{44} \oplus k_{47}k_{44} \oplus k_{79}k_{78}k_{47}k_{44} \oplus k_{73}k_{47}k_{44} \oplus \\
& k_{72}k_{71}k_{47}k_{44} \oplus k_{73}k_{62}k_{47}k_{44} \oplus k_{72}k_{71}k_{62}k_{47}k_{44} \oplus k_{73}k_{61}k_{60}k_{47}k_{44} \oplus \\
& k_{72}k_{71}k_{61}k_{60}k_{47}k_{44} \oplus k_{53}k_{47}k_{44} \oplus k_{46}k_{44} \oplus k_{74}k_{46}k_{44} \oplus k_{73}k_{72}k_{46}k_{44} \oplus \\
& k_{62}k_{46}k_{44} \oplus k_{74}k_{62}k_{46}k_{44} \oplus k_{73}k_{72}k_{62}k_{46}k_{44} \oplus k_{61}k_{46}k_{44} \oplus k_{61}k_{60}k_{46}k_{44} \oplus \\
& k_{74}k_{61}k_{60}k_{46}k_{44} \oplus k_{73}k_{72}k_{61}k_{60}k_{46}k_{44} \oplus k_{60}k_{59}k_{46}k_{44} \oplus k_{62}k_{47}k_{46}k_{44} \oplus \\
& k_{61}k_{60}k_{47}k_{46}k_{44} \oplus k_{42} \oplus k_{41} \oplus k_{78}k_{41} \oplus k_{77}k_{76}k_{41} \oplus k_{65}k_{41} \oplus k_{64}k_{63}k_{41} \oplus \\
& k_{57}k_{41} \oplus k_{74}k_{57}k_{41} \oplus k_{73}k_{72}k_{57}k_{41} \oplus k_{51}k_{41} \oplus k_{57}k_{47}k_{41} \oplus k_{57}k_{40} \oplus \\
& k_{74}k_{57}k_{40} \oplus k_{73}k_{72}k_{57}k_{40} \oplus k_{66}k_{57}k_{40} \oplus k_{74}k_{66}k_{57}k_{40} \oplus k_{73}k_{72}k_{66}k_{57}k_{40} \oplus \\
& k_{65}k_{64}k_{57}k_{40} \oplus k_{74}k_{65}k_{64}k_{57}k_{40} \oplus k_{73}k_{72}k_{65}k_{64}k_{57}k_{40} \oplus k_{57}k_{47}k_{40} \oplus \\
& k_{66}k_{57}k_{47}k_{40} \oplus k_{65}k_{64}k_{57}k_{47}k_{40} \oplus k_{39} \oplus k_{62}k_{39} \oplus k_{67}k_{57}k_{39} \oplus k_{74}k_{67}k_{57}k_{39} \oplus \\
& k_{73}k_{72}k_{67}k_{57}k_{39} \oplus k_{66}k_{65}k_{57}k_{39} \oplus k_{74}k_{66}k_{65}k_{57}k_{39} \oplus k_{73}k_{72}k_{66}k_{65}k_{57}k_{39} \oplus \\
& k_{67}k_{57}k_{47}k_{39} \oplus k_{66}k_{65}k_{57}k_{47}k_{39} \oplus k_{57}k_{40}k_{39} \oplus k_{74}k_{57}k_{40}k_{39} \oplus \\
& k_{73}k_{72}k_{57}k_{40}k_{39} \oplus k_{57}k_{47}k_{40}k_{39} \oplus k_{38} \oplus k_{68}k_{38} \oplus k_{67}k_{66}k_{38} \oplus k_{41}k_{38} \oplus \\
& k_{78}k_{37} \oplus k_{79}k_{78}k_{37} \oplus k_{77}k_{37} \oplus k_{77}k_{76}k_{37} \oplus k_{76}k_{75}k_{37} \oplus k_{74}k_{37} \oplus k_{73}k_{72}k_{37} \oplus \\
& k_{71}k_{37} \oplus k_{70}k_{69}k_{37} \oplus k_{63}k_{37} \oplus k_{62}k_{37} \oplus k_{62}k_{61}k_{37} \oplus k_{59}k_{37} \oplus k_{58}k_{37} \oplus \\
& k_{77}k_{58}k_{37} \oplus k_{76}k_{75}k_{58}k_{37} \oplus k_{74}k_{58}k_{37} \oplus k_{73}k_{72}k_{58}k_{37} \oplus k_{57}k_{37} \oplus k_{58}k_{57}k_{37} \oplus \\
& k_{53}k_{37} \oplus k_{51}k_{37} \oplus k_{50}k_{37} \oplus k_{58}k_{50}k_{37} \oplus k_{47}k_{37} \oplus k_{58}k_{47}k_{37} \oplus k_{44}k_{37} \oplus k_{36} \oplus \\
& k_{71}k_{36} \oplus k_{70}k_{69}k_{36} \oplus k_{64}k_{36} \oplus k_{63}k_{62}k_{36} \oplus k_{61}k_{36} \oplus k_{59}k_{36} \oplus k_{57}k_{36} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{79}k_{78}k_{57}k_{36} \oplus k_{79}k_{78}k_{74}k_{57}k_{36} \oplus k_{73}k_{57}k_{36} \oplus k_{79}k_{78}k_{73}k_{72}k_{57}k_{36} \oplus \\
& k_{72}k_{71}k_{57}k_{36} \oplus k_{58}k_{57}k_{36} \oplus k_{57}k_{54}k_{36} \oplus k_{57}k_{53}k_{36} \oplus k_{74}k_{57}k_{53}k_{36} \oplus \\
& k_{73}k_{72}k_{57}k_{53}k_{36} \oplus k_{79}k_{78}k_{57}k_{47}k_{36} \oplus k_{57}k_{53}k_{47}k_{36} \oplus k_{57}k_{46}k_{36} \oplus k_{44}k_{36} \oplus \\
& k_{35} \oplus k_{77}k_{35} \oplus k_{75}k_{35} \oplus k_{76}k_{75}k_{35} \oplus k_{74}k_{73}k_{35} \oplus k_{75}k_{71}k_{35} \oplus k_{73}k_{71}k_{35} \oplus \\
& k_{72}k_{71}k_{35} \oplus k_{74}k_{72}k_{71}k_{35} \oplus k_{75}k_{70}k_{69}k_{35} \oplus k_{73}k_{70}k_{69}k_{35} \oplus k_{73}k_{72}k_{70}k_{69}k_{35} \oplus \\
& k_{72}k_{71}k_{70}k_{69}k_{35} \oplus k_{74}k_{72}k_{71}k_{70}k_{69}k_{35} \oplus k_{73}k_{72}k_{71}k_{70}k_{69}k_{35} \oplus k_{61}k_{35} \oplus \\
& k_{71}k_{61}k_{35} \oplus k_{70}k_{69}k_{61}k_{35} \oplus k_{71}k_{60}k_{35} \oplus k_{70}k_{69}k_{60}k_{35} \oplus k_{75}k_{59}k_{35} \oplus \\
& k_{73}k_{59}k_{35} \oplus k_{73}k_{72}k_{59}k_{35} \oplus k_{72}k_{71}k_{59}k_{35} \oplus k_{74}k_{72}k_{71}k_{59}k_{35} \oplus \\
& k_{73}k_{72}k_{71}k_{59}k_{35} \oplus k_{61}k_{59}k_{35} \oplus k_{60}k_{59}k_{35} \oplus k_{71}k_{60}k_{59}k_{35} \oplus k_{70}k_{69}k_{60}k_{59}k_{35} \oplus \\
& k_{58}k_{35} \oplus k_{76}k_{58}k_{35} \oplus k_{75}k_{58}k_{35} \oplus k_{74}k_{58}k_{35} \oplus k_{74}k_{73}k_{58}k_{35} \oplus k_{72}k_{58}k_{35} \oplus \\
& k_{75}k_{73}k_{72}k_{58}k_{35} \oplus k_{74}k_{73}k_{72}k_{58}k_{35} \oplus k_{74}k_{72}k_{71}k_{58}k_{35} \oplus k_{73}k_{72}k_{71}k_{58}k_{35} \oplus \\
& k_{71}k_{70}k_{58}k_{35} \oplus k_{59}k_{58}k_{35} \oplus k_{71}k_{59}k_{58}k_{35} \oplus k_{70}k_{69}k_{59}k_{58}k_{35} \oplus k_{75}k_{57}k_{35} \oplus \\
& k_{74}k_{57}k_{35} \oplus k_{73}k_{57}k_{35} \oplus k_{72}k_{57}k_{35} \oplus k_{72}k_{71}k_{57}k_{35} \oplus k_{74}k_{72}k_{71}k_{57}k_{35} \oplus \\
& k_{73}k_{72}k_{71}k_{57}k_{35} \oplus k_{71}k_{70}k_{57}k_{35} \oplus k_{79}k_{78}k_{61}k_{57}k_{35} \oplus k_{79}k_{78}k_{74}k_{61}k_{57}k_{35} \oplus \\
& k_{73}k_{61}k_{57}k_{35} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{57}k_{35} \oplus k_{72}k_{71}k_{61}k_{57}k_{35} \oplus k_{60}k_{57}k_{35} \oplus \\
& k_{60}k_{59}k_{57}k_{35} \oplus k_{79}k_{78}k_{60}k_{59}k_{57}k_{35} \oplus k_{79}k_{78}k_{74}k_{60}k_{59}k_{57}k_{35} \oplus \\
& k_{73}k_{60}k_{59}k_{57}k_{35} \oplus k_{79}k_{78}k_{73}k_{72}k_{60}k_{59}k_{57}k_{35} \oplus k_{72}k_{71}k_{60}k_{59}k_{57}k_{35} \oplus \\
& k_{75}k_{58}k_{57}k_{35} \oplus k_{73}k_{58}k_{57}k_{35} \oplus k_{73}k_{72}k_{58}k_{57}k_{35} \oplus k_{72}k_{71}k_{58}k_{57}k_{35} \oplus \\
& k_{74}k_{72}k_{71}k_{58}k_{57}k_{35} \oplus k_{73}k_{72}k_{71}k_{58}k_{57}k_{35} \oplus k_{61}k_{58}k_{57}k_{35} \oplus k_{60}k_{58}k_{57}k_{35} \oplus \\
& k_{60}k_{59}k_{58}k_{57}k_{35} \oplus k_{57}k_{55}k_{35} \oplus k_{57}k_{54}k_{35} \oplus k_{74}k_{57}k_{54}k_{35} \oplus k_{73}k_{72}k_{57}k_{54}k_{35} \oplus \\
& k_{61}k_{57}k_{54}k_{35} \oplus k_{60}k_{59}k_{57}k_{54}k_{35} \oplus k_{61}k_{57}k_{53}k_{35} \oplus k_{74}k_{61}k_{57}k_{53}k_{35} \oplus \\
& k_{73}k_{72}k_{61}k_{57}k_{53}k_{35} \oplus k_{60}k_{59}k_{57}k_{53}k_{35} \oplus k_{74}k_{60}k_{59}k_{57}k_{53}k_{35} \oplus \\
& k_{73}k_{72}k_{60}k_{59}k_{57}k_{53}k_{35} \oplus k_{50}k_{35} \oplus k_{58}k_{49}k_{35} \oplus k_{48}k_{35} \oplus k_{71}k_{48}k_{35} \oplus \\
& k_{70}k_{69}k_{48}k_{35} \oplus k_{59}k_{48}k_{35} \oplus k_{58}k_{48}k_{35} \oplus k_{74}k_{58}k_{48}k_{35} \oplus k_{73}k_{72}k_{58}k_{48}k_{35} \oplus \\
& k_{57}k_{48}k_{35} \oplus k_{58}k_{57}k_{48}k_{35} \oplus k_{73}k_{71}k_{47}k_{35} \oplus k_{72}k_{71}k_{47}k_{35} \oplus k_{73}k_{70}k_{69}k_{47}k_{35} \oplus \\
& k_{72}k_{71}k_{70}k_{69}k_{47}k_{35} \oplus k_{73}k_{59}k_{47}k_{35} \oplus k_{72}k_{71}k_{59}k_{47}k_{35} \oplus k_{58}k_{47}k_{35} \oplus \\
& k_{75}k_{58}k_{47}k_{35} \oplus k_{73}k_{58}k_{47}k_{35} \oplus k_{74}k_{73}k_{58}k_{47}k_{35} \oplus k_{72}k_{71}k_{58}k_{47}k_{35} \oplus \\
& k_{57}k_{47}k_{35} \oplus k_{73}k_{57}k_{47}k_{35} \oplus k_{72}k_{71}k_{57}k_{47}k_{35} \oplus k_{79}k_{78}k_{61}k_{57}k_{47}k_{35} \oplus \\
& k_{79}k_{78}k_{60}k_{59}k_{57}k_{47}k_{35} \oplus k_{73}k_{58}k_{57}k_{47}k_{35} \oplus k_{72}k_{71}k_{58}k_{57}k_{47}k_{35} \oplus \\
& k_{57}k_{54}k_{47}k_{35} \oplus k_{61}k_{57}k_{53}k_{47}k_{35} \oplus k_{60}k_{59}k_{57}k_{53}k_{47}k_{35} \oplus k_{58}k_{48}k_{47}k_{35} \oplus \\
& k_{71}k_{46}k_{35} \oplus k_{74}k_{71}k_{46}k_{35} \oplus k_{73}k_{72}k_{71}k_{46}k_{35} \oplus k_{70}k_{69}k_{46}k_{35} \oplus \\
& k_{74}k_{70}k_{69}k_{46}k_{35} \oplus k_{73}k_{72}k_{70}k_{69}k_{46}k_{35} \oplus k_{59}k_{46}k_{35} \oplus k_{74}k_{59}k_{46}k_{35} \oplus \\
& k_{73}k_{72}k_{59}k_{46}k_{35} \oplus k_{74}k_{58}k_{46}k_{35} \oplus k_{73}k_{72}k_{58}k_{46}k_{35} \oplus k_{57}k_{46}k_{35} \oplus \\
& k_{74}k_{57}k_{46}k_{35} \oplus k_{73}k_{72}k_{57}k_{46}k_{35} \oplus k_{61}k_{57}k_{46}k_{35} \oplus k_{60}k_{59}k_{57}k_{46}k_{35} \oplus \\
& k_{58}k_{57}k_{46}k_{35} \oplus k_{74}k_{58}k_{57}k_{46}k_{35} \oplus k_{73}k_{72}k_{58}k_{57}k_{46}k_{35} \oplus k_{71}k_{47}k_{46}k_{35} \oplus \\
& k_{70}k_{69}k_{47}k_{46}k_{35} \oplus k_{59}k_{47}k_{46}k_{35} \oplus k_{58}k_{47}k_{46}k_{35} \oplus k_{57}k_{47}k_{46}k_{35} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{58}k_{57}k_{47}k_{46}k_{35} \oplus k_{58}k_{45}k_{35} \oplus k_{57}k_{45}k_{35} \oplus k_{75}k_{44}k_{35} \oplus k_{73}k_{44}k_{35} \oplus \\
& k_{73}k_{72}k_{44}k_{35} \oplus k_{72}k_{71}k_{44}k_{35} \oplus k_{74}k_{72}k_{71}k_{44}k_{35} \oplus k_{73}k_{72}k_{71}k_{44}k_{35} \oplus \\
& k_{61}k_{44}k_{35} \oplus k_{60}k_{44}k_{35} \oplus k_{60}k_{59}k_{44}k_{35} \oplus k_{59}k_{58}k_{44}k_{35} \oplus k_{48}k_{44}k_{35} \oplus \\
& k_{73}k_{47}k_{44}k_{35} \oplus k_{72}k_{71}k_{47}k_{44}k_{35} \oplus k_{46}k_{44}k_{35} \oplus k_{74}k_{46}k_{44}k_{35} \oplus \\
& k_{73}k_{72}k_{46}k_{44}k_{35} \oplus k_{47}k_{46}k_{44}k_{35} \oplus k_{34} \oplus k_{79}k_{78}k_{34} \oplus k_{75}k_{34} \oplus k_{74}k_{73}k_{34} \oplus \\
& k_{71}k_{34} \oplus k_{73}k_{71}k_{34} \oplus k_{72}k_{71}k_{34} \oplus k_{70}k_{69}k_{34} \oplus k_{73}k_{70}k_{69}k_{34} \oplus \\
& k_{72}k_{71}k_{70}k_{69}k_{34} \oplus k_{62}k_{34} \oplus k_{71}k_{62}k_{34} \oplus k_{70}k_{69}k_{62}k_{34} \oplus k_{61}k_{60}k_{34} \oplus \\
& k_{71}k_{61}k_{60}k_{34} \oplus k_{70}k_{69}k_{61}k_{60}k_{34} \oplus k_{59}k_{34} \oplus k_{73}k_{59}k_{34} \oplus k_{72}k_{71}k_{59}k_{34} \oplus \\
& k_{62}k_{59}k_{34} \oplus k_{61}k_{60}k_{59}k_{34} \oplus k_{72}k_{58}k_{34} \oplus k_{71}k_{70}k_{58}k_{34} \oplus k_{60}k_{58}k_{34} \oplus \\
& k_{59}k_{58}k_{34} \oplus k_{74}k_{57}k_{34} \oplus k_{73}k_{57}k_{34} \oplus k_{72}k_{57}k_{34} \oplus k_{73}k_{72}k_{57}k_{34} \oplus \\
& k_{72}k_{71}k_{57}k_{34} \oplus k_{71}k_{70}k_{57}k_{34} \oplus k_{62}k_{57}k_{34} \oplus k_{79}k_{78}k_{62}k_{57}k_{34} \oplus \\
& k_{79}k_{78}k_{74}k_{62}k_{57}k_{34} \oplus k_{73}k_{62}k_{57}k_{34} \oplus k_{79}k_{78}k_{73}k_{72}k_{62}k_{57}k_{34} \oplus \\
& k_{72}k_{71}k_{62}k_{57}k_{34} \oplus k_{61}k_{57}k_{34} \oplus k_{61}k_{60}k_{57}k_{34} \oplus k_{79}k_{78}k_{61}k_{60}k_{57}k_{34} \oplus \\
& k_{79}k_{78}k_{74}k_{61}k_{60}k_{57}k_{34} \oplus k_{73}k_{61}k_{60}k_{57}k_{34} \oplus k_{79}k_{78}k_{73}k_{72}k_{61}k_{60}k_{57}k_{34} \oplus \\
& k_{72}k_{71}k_{61}k_{60}k_{57}k_{34} \oplus k_{58}k_{57}k_{34} \oplus k_{73}k_{58}k_{57}k_{34} \oplus k_{72}k_{71}k_{58}k_{57}k_{34} \oplus \\
& k_{62}k_{58}k_{57}k_{34} \oplus k_{61}k_{60}k_{58}k_{57}k_{34} \oplus k_{55}k_{34} \oplus k_{57}k_{55}k_{34} \oplus k_{57}k_{54}k_{34} \oplus \\
& k_{74}k_{57}k_{54}k_{34} \oplus k_{73}k_{72}k_{57}k_{54}k_{34} \oplus k_{62}k_{57}k_{54}k_{34} \oplus k_{61}k_{60}k_{57}k_{54}k_{34} \oplus k_{53}k_{34} \oplus \\
& k_{62}k_{57}k_{53}k_{34} \oplus k_{74}k_{62}k_{57}k_{53}k_{34} \oplus k_{73}k_{72}k_{62}k_{57}k_{53}k_{34} \oplus k_{61}k_{60}k_{57}k_{53}k_{34} \oplus \\
& k_{74}k_{61}k_{60}k_{57}k_{53}k_{34} \oplus k_{73}k_{72}k_{61}k_{60}k_{57}k_{53}k_{34} \oplus k_{48}k_{34} \oplus k_{57}k_{47}k_{34} \oplus \\
& k_{79}k_{78}k_{62}k_{57}k_{47}k_{34} \oplus k_{79}k_{78}k_{61}k_{60}k_{57}k_{47}k_{34} \oplus k_{57}k_{54}k_{47}k_{34} \oplus \\
& k_{62}k_{57}k_{53}k_{47}k_{34} \oplus k_{61}k_{60}k_{57}k_{53}k_{47}k_{34} \oplus k_{71}k_{46}k_{34} \oplus k_{70}k_{69}k_{46}k_{34} \oplus \\
& k_{59}k_{46}k_{34} \oplus k_{57}k_{46}k_{34} \oplus k_{62}k_{57}k_{46}k_{34} \oplus k_{61}k_{60}k_{57}k_{46}k_{34} \oplus k_{58}k_{57}k_{46}k_{34} \oplus \\
& k_{58}k_{45}k_{34} \oplus k_{57}k_{45}k_{34} \oplus k_{44}k_{34} \oplus k_{73}k_{44}k_{34} \oplus k_{72}k_{71}k_{44}k_{34} \oplus k_{62}k_{44}k_{34} \oplus \\
& k_{61}k_{60}k_{44}k_{34} \oplus k_{46}k_{44}k_{34} \oplus k_{35}k_{34} \oplus k_{71}k_{35}k_{34} \oplus k_{70}k_{69}k_{35}k_{34} \oplus k_{59}k_{35}k_{34} \oplus \\
& k_{57}k_{35}k_{34} \oplus k_{79}k_{78}k_{57}k_{35}k_{34} \oplus k_{79}k_{78}k_{74}k_{57}k_{35}k_{34} \oplus k_{73}k_{57}k_{35}k_{34} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{57}k_{35}k_{34} \oplus k_{72}k_{71}k_{57}k_{35}k_{34} \oplus k_{58}k_{57}k_{35}k_{34} \oplus k_{57}k_{54}k_{35}k_{34} \oplus \\
& k_{57}k_{53}k_{35}k_{34} \oplus k_{74}k_{57}k_{53}k_{35}k_{34} \oplus k_{73}k_{72}k_{57}k_{53}k_{35}k_{34} \oplus k_{79}k_{78}k_{57}k_{47}k_{35}k_{34} \oplus \\
& k_{57}k_{53}k_{47}k_{35}k_{34} \oplus k_{57}k_{46}k_{35}k_{34} \oplus k_{44}k_{35}k_{34} \oplus k_{33} \oplus k_{71}k_{33} \oplus k_{70}k_{69}k_{33} \oplus \\
& k_{71}k_{62}k_{33} \oplus k_{70}k_{69}k_{62}k_{33} \oplus k_{71}k_{61}k_{60}k_{33} \oplus k_{70}k_{69}k_{61}k_{60}k_{33} \oplus k_{59}k_{33} \oplus \\
& k_{62}k_{59}k_{33} \oplus k_{61}k_{60}k_{59}k_{33} \oplus k_{58}k_{33} \oplus k_{61}k_{58}k_{33} \oplus k_{60}k_{59}k_{58}k_{33} \oplus k_{62}k_{57}k_{33} \oplus \\
& k_{61}k_{60}k_{57}k_{33} \oplus k_{58}k_{57}k_{33} \oplus k_{62}k_{58}k_{57}k_{33} \oplus k_{61}k_{60}k_{58}k_{57}k_{33} \oplus k_{44}k_{33} \oplus \\
& k_{62}k_{44}k_{33} \oplus k_{61}k_{60}k_{44}k_{33} \oplus k_{71}k_{35}k_{33} \oplus k_{70}k_{69}k_{35}k_{33} \oplus k_{59}k_{35}k_{33} \oplus \\
& k_{57}k_{35}k_{33} \oplus k_{58}k_{57}k_{35}k_{33} \oplus k_{44}k_{35}k_{33} \oplus k_{58}k_{34}k_{33} \oplus k_{32} \oplus k_{74}k_{57}k_{32} \oplus \\
& k_{73}k_{72}k_{57}k_{32} \oplus k_{57}k_{47}k_{32} \oplus k_{32}k_{31} \oplus k_{57}k_{26} \oplus k_{74}k_{57}k_{26} \oplus k_{73}k_{72}k_{57}k_{26} \oplus \\
& k_{57}k_{47}k_{26} \oplus k_{24} \oplus k_{23} \oplus k_{75}k_{22} \oplus k_{74}k_{73}k_{22} \oplus k_{48}k_{22} \oplus k_{21} \oplus k_{75}k_{21} \oplus \\
& k_{74}k_{73}k_{21} \oplus k_{71}k_{21} \oplus k_{70}k_{69}k_{21} \oplus k_{59}k_{21} \oplus k_{57}k_{21} \oplus k_{79}k_{78}k_{57}k_{21} \oplus
\end{aligned}$$



$$\begin{aligned}
& k_{79}k_{78}k_{74}k_{57}k_{21} \oplus k_{73}k_{57}k_{21} \oplus k_{79}k_{78}k_{73}k_{72}k_{57}k_{21} \oplus k_{72}k_{71}k_{57}k_{21} \oplus \\
& k_{58}k_{57}k_{21} \oplus k_{57}k_{54}k_{21} \oplus k_{57}k_{53}k_{21} \oplus k_{74}k_{57}k_{53}k_{21} \oplus k_{73}k_{72}k_{57}k_{53}k_{21} \oplus \\
& k_{48}k_{21} \oplus k_{79}k_{78}k_{57}k_{47}k_{21} \oplus k_{57}k_{53}k_{47}k_{21} \oplus k_{57}k_{46}k_{21} \oplus k_{44}k_{21} \oplus k_{79}k_{78}k_{19} \oplus \\
& k_{63}k_{19} \oplus k_{62}k_{61}k_{19} \oplus k_{53}k_{19} \oplus k_{36}k_{19} \oplus k_{74}k_{57}k_{17} \oplus k_{73}k_{72}k_{57}k_{17} \oplus \\
& k_{62}k_{57}k_{17} \oplus k_{74}k_{62}k_{57}k_{17} \oplus k_{73}k_{72}k_{62}k_{57}k_{17} \oplus k_{61}k_{57}k_{17} \oplus k_{61}k_{60}k_{57}k_{17} \oplus \\
& k_{74}k_{61}k_{60}k_{57}k_{17} \oplus k_{73}k_{72}k_{61}k_{60}k_{57}k_{17} \oplus k_{60}k_{59}k_{57}k_{17} \oplus k_{57}k_{47}k_{17} \oplus \\
& k_{62}k_{57}k_{47}k_{17} \oplus k_{61}k_{60}k_{57}k_{47}k_{17} \oplus k_{57}k_{35}k_{17} \oplus k_{74}k_{57}k_{35}k_{17} \oplus \\
& k_{73}k_{72}k_{57}k_{35}k_{17} \oplus k_{57}k_{47}k_{35}k_{17} \oplus k_{57}k_{34}k_{17} \oplus k_{79}k_{78}k_{18}k_{17} \oplus k_{63}k_{18}k_{17} \oplus \\
& k_{62}k_{61}k_{18}k_{17} \oplus k_{53}k_{18}k_{17} \oplus k_{36}k_{18}k_{17} \oplus k_{57}k_{16} \oplus k_{79}k_{78}k_{74}k_{57}k_{16} \oplus \\
& k_{79}k_{78}k_{73}k_{72}k_{57}k_{16} \oplus k_{62}k_{57}k_{16} \oplus k_{61}k_{57}k_{16} \oplus k_{61}k_{60}k_{57}k_{16} \oplus k_{60}k_{59}k_{57}k_{16} \oplus \\
& k_{74}k_{57}k_{53}k_{16} \oplus k_{73}k_{72}k_{57}k_{53}k_{16} \oplus k_{52}k_{16} \oplus k_{51}k_{16} \oplus k_{50}k_{16} \oplus k_{51}k_{50}k_{16} \oplus \\
& k_{50}k_{49}k_{16} \oplus k_{49}k_{48}k_{16} \oplus k_{79}k_{78}k_{57}k_{47}k_{16} \oplus k_{57}k_{53}k_{47}k_{16} \oplus k_{37}k_{16} \oplus \\
& k_{57}k_{35}k_{16} \oplus k_{36}k_{35}k_{16} \oplus k_{57}k_{34}k_{16} \oplus k_{25}k_{16} \oplus k_{24}k_{16} \oplus k_{23}k_{16} \oplus k_{15} \oplus \\
& k_{77}k_{15} \oplus k_{75}k_{15} \oplus k_{76}k_{74}k_{73}k_{15} \oplus k_{75}k_{74}k_{73}k_{15} \oplus k_{75}k_{73}k_{72}k_{15} \oplus \\
& k_{74}k_{73}k_{72}k_{15} \oplus k_{61}k_{15} \oplus k_{60}k_{15} \oplus k_{60}k_{59}k_{15} \oplus k_{58}k_{15} \oplus k_{62}k_{58}k_{15} \oplus \\
& k_{61}k_{60}k_{58}k_{15} \oplus k_{59}k_{58}k_{15} \oplus k_{50}k_{15} \oplus k_{75}k_{49}k_{15} \oplus k_{74}k_{73}k_{49}k_{15} \oplus k_{48}k_{15} \oplus \\
& k_{76}k_{48}k_{15} \oplus k_{74}k_{48}k_{15} \oplus k_{75}k_{74}k_{48}k_{15} \oplus k_{73}k_{72}k_{48}k_{15} \oplus k_{49}k_{48}k_{15} \oplus \\
& k_{75}k_{47}k_{15} \oplus k_{74}k_{73}k_{47}k_{15} \oplus k_{48}k_{47}k_{15} \oplus k_{58}k_{35}k_{15} \oplus k_{34}k_{15} \oplus k_{33}k_{15} \oplus k_{14} \oplus \\
& k_{62}k_{58}k_{14} \oplus k_{61}k_{58}k_{14} \oplus k_{61}k_{60}k_{58}k_{14} \oplus k_{60}k_{59}k_{58}k_{14} \oplus k_{57}k_{14} \oplus k_{74}k_{57}k_{14} \oplus \\
& k_{73}k_{72}k_{57}k_{14} \oplus k_{57}k_{54}k_{14} \oplus k_{57}k_{47}k_{14} \oplus k_{58}k_{35}k_{14} \oplus k_{58}k_{34}k_{14} \oplus k_{11} \oplus \\
& k_{16}k_{10} \oplus \textcolor{red}{k}_9 \oplus k_8 \oplus k_{77}k_8 \oplus k_{75}k_{74}k_8 \oplus k_{74}k_{73}k_8 \oplus k_{76}k_{74}k_{73}k_8 \oplus \\
& k_{75}k_{74}k_{73}k_8 \oplus k_{73}k_{72}k_8 \oplus k_{74}k_{72}k_{71}k_8 \oplus k_{73}k_{72}k_{71}k_8 \oplus k_{73}k_{61}k_8 \oplus \\
& k_{72}k_{71}k_{61}k_8 \oplus k_{60}k_8 \oplus k_{73}k_{60}k_{59}k_8 \oplus k_{72}k_{71}k_{60}k_{59}k_8 \oplus k_{77}k_{58}k_8 \oplus \\
& k_{75}k_{74}k_{58}k_8 \oplus k_{76}k_{74}k_{73}k_{58}k_8 \oplus k_{75}k_{74}k_{73}k_{58}k_8 \oplus k_{62}k_{58}k_8 \oplus k_{61}k_{60}k_{58}k_8 \oplus \\
& k_{59}k_{58}k_8 \oplus k_{57}k_8 \oplus k_{63}k_{57}k_8 \oplus k_{62}k_{57}k_8 \oplus k_{74}k_{62}k_{57}k_8 \oplus k_{73}k_{72}k_{62}k_{57}k_8 \oplus \\
& k_{74}k_{61}k_{57}k_8 \oplus k_{73}k_{72}k_{61}k_{57}k_8 \oplus k_{74}k_{61}k_{60}k_{57}k_8 \oplus k_{73}k_{72}k_{61}k_{60}k_{57}k_8 \oplus \\
& k_{60}k_{59}k_{57}k_8 \oplus k_{74}k_{60}k_{59}k_{57}k_8 \oplus k_{73}k_{72}k_{60}k_{59}k_{57}k_8 \oplus k_{62}k_{60}k_{59}k_{57}k_8 \oplus \\
& k_{61}k_{60}k_{59}k_{57}k_8 \oplus k_{57}k_{55}k_8 \oplus k_{50}k_8 \oplus k_{58}k_{50}k_8 \oplus k_{75}k_{49}k_8 \oplus k_{74}k_{73}k_{49}k_8 \oplus \\
& k_{75}k_{58}k_{49}k_8 \oplus k_{74}k_{73}k_{58}k_{49}k_8 \oplus k_{76}k_{48}k_8 \oplus k_{75}k_{74}k_{48}k_8 \oplus k_{76}k_{58}k_{48}k_8 \oplus \\
& k_{75}k_{74}k_{58}k_{48}k_8 \oplus k_{57}k_{48}k_8 \oplus k_{49}k_{48}k_8 \oplus k_{58}k_{49}k_{48}k_8 \oplus k_{73}k_{47}k_8 \oplus \\
& k_{72}k_{71}k_{47}k_8 \oplus k_{62}k_{57}k_{47}k_8 \oplus k_{61}k_{57}k_{47}k_8 \oplus k_{61}k_{60}k_{57}k_{47}k_8 \oplus \\
& k_{60}k_{59}k_{57}k_{47}k_8 \oplus k_{74}k_{46}k_8 \oplus k_{73}k_{72}k_{46}k_8 \oplus k_{61}k_{46}k_8 \oplus k_{60}k_{59}k_{46}k_8 \oplus \\
& k_{47}k_{46}k_8 \oplus k_{57}k_{47}k_{46}k_8 \oplus k_{41}k_8 \oplus k_{58}k_{41}k_8 \oplus k_{57}k_{36}k_8 \oplus k_{58}k_{35}k_8 \oplus \\
& k_{57}k_{35}k_8 \oplus k_{74}k_{57}k_{35}k_8 \oplus k_{73}k_{72}k_{57}k_{35}k_8 \oplus k_{61}k_{57}k_{35}k_8 \oplus k_{60}k_{59}k_{57}k_{35}k_8 \oplus \\
& k_{57}k_{47}k_{35}k_8 \oplus k_{73}k_{34}k_8 \oplus k_{72}k_{71}k_{34}k_8 \oplus k_{57}k_{34}k_8 \oplus k_{74}k_{57}k_{34}k_8 \oplus \\
& k_{73}k_{72}k_{57}k_{34}k_8 \oplus k_{62}k_{57}k_{34}k_8 \oplus k_{61}k_{60}k_{57}k_{34}k_8 \oplus k_{57}k_{47}k_{34}k_8 \oplus k_{46}k_{34}k_8 \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{57}k_{35}k_{34}k_8 \oplus k_{33}k_8 \oplus k_{57}k_{21}k_8 \oplus k_{57}k_{16}k_8 \oplus k_{63}k_7 \oplus k_{62}k_{61}k_7 \oplus k_{58}k_7 \oplus \\
& k_{36}k_7 \oplus k_{76}k_6 \oplus k_{75}k_{74}k_6 \oplus k_{71}k_6 \oplus k_{70}k_{69}k_6 \oplus k_{59}k_6 \oplus k_{58}k_6 \oplus k_{57}k_6 \oplus \\
& k_{73}k_{57}k_6 \oplus k_{72}k_{71}k_{57}k_6 \oplus k_{62}k_{57}k_6 \oplus k_{61}k_{57}k_6 \oplus k_{61}k_{60}k_{57}k_6 \oplus k_{60}k_{59}k_{57}k_6 \oplus \\
& k_{58}k_{57}k_6 \oplus k_{49}k_6 \oplus k_{57}k_{46}k_6 \oplus k_{44}k_6 \oplus k_{57}k_{35}k_6 \oplus k_{57}k_{34}k_6 \oplus k_{57}k_2
\end{aligned}$$

### 3 Superpoly $p_{I_9}$

Taking the cube of dimension 76 as

$$I_6 = \{0, 1, \dots, 71, 73, 75, 77, 79\}, \quad IV[72] = IV[74] = IV[76] = IV[78] = 0,$$

we recover the superpoly  $p_{I_9}$  for 842-Round TRIVIUM that has 5147 terms, and we give it as the following

$$\begin{aligned}
p_{I_9} = & 1 \oplus k_{78} \oplus k_{79}k_{78} \oplus k_{78}k_{77} \oplus k_{79}k_{78}k_{77} \oplus k_{79}k_{78}k_{77}k_{76} \oplus k_{75} \oplus k_{78}k_{75} \oplus \\
& k_{78}k_{76}k_{75} \oplus k_{74} \oplus k_{78}k_{74} \oplus k_{79}k_{78}k_{74} \oplus k_{77}k_{75}k_{74} \oplus k_{73} \oplus k_{79}k_{73} \oplus \\
& k_{78}k_{73} \oplus k_{79}k_{78}k_{73} \oplus k_{77}k_{73} \oplus k_{78}k_{77}k_{73} \oplus k_{75}k_{73} \oplus k_{78}k_{74}k_{73} \oplus \\
& k_{77}k_{76}k_{74}k_{73} \oplus k_{77}k_{75}k_{74}k_{73} \oplus k_{76}k_{75}k_{74}k_{73} \oplus k_{77}k_{76}k_{72} \oplus k_{76}k_{75}k_{72} \oplus \\
& k_{74}k_{72} \oplus k_{77}k_{75}k_{74}k_{72} \oplus k_{76}k_{75}k_{74}k_{72} \oplus k_{73}k_{72} \oplus k_{79}k_{78}k_{73}k_{72} \oplus \\
& k_{76}k_{73}k_{72} \oplus k_{75}k_{74}k_{73}k_{72} \oplus k_{71} \oplus k_{78}k_{71} \oplus k_{79}k_{78}k_{71} \oplus k_{77}k_{76}k_{71} \oplus \\
& k_{79}k_{72}k_{71} \oplus k_{79}k_{78}k_{72}k_{71} \oplus k_{77}k_{72}k_{71} \oplus k_{78}k_{77}k_{72}k_{71} \oplus k_{75}k_{72}k_{71} \oplus \\
& k_{76}k_{75}k_{72}k_{71} \oplus k_{74}k_{73}k_{72}k_{71} \oplus k_{70} \oplus k_{79}k_{78}k_{70} \oplus k_{76}k_{71}k_{70} \oplus \\
& k_{77}k_{76}k_{71}k_{70} \oplus k_{76}k_{75}k_{71}k_{70} \oplus k_{74}k_{71}k_{70} \oplus k_{75}k_{74}k_{71}k_{70} \oplus \\
& k_{77}k_{75}k_{74}k_{71}k_{70} \oplus k_{76}k_{75}k_{74}k_{71}k_{70} \oplus k_{73}k_{71}k_{70} \oplus k_{78}k_{73}k_{71}k_{70} \oplus \\
& k_{76}k_{73}k_{71}k_{70} \oplus k_{76}k_{75}k_{73}k_{71}k_{70} \oplus k_{75}k_{74}k_{73}k_{71}k_{70} \oplus k_{77}k_{75}k_{74}k_{73}k_{71}k_{70} \oplus \\
& k_{76}k_{75}k_{74}k_{73}k_{71}k_{70} \oplus k_{72}k_{71}k_{70} \oplus k_{78}k_{72}k_{71}k_{70} \oplus k_{76}k_{72}k_{71}k_{70} \oplus \\
& k_{76}k_{75}k_{72}k_{71}k_{70} \oplus k_{75}k_{74}k_{72}k_{71}k_{70} \oplus k_{77}k_{75}k_{74}k_{72}k_{71}k_{70} \oplus \\
& k_{76}k_{75}k_{74}k_{72}k_{71}k_{70} \oplus k_{73}k_{72}k_{71}k_{70} \oplus k_{69} \oplus k_{79}k_{78}k_{69} \oplus k_{77}k_{69} \oplus k_{75}k_{69} \oplus \\
& k_{76}k_{75}k_{69} \oplus k_{73}k_{69} \oplus k_{72}k_{69} \oplus k_{76}k_{72}k_{69} \oplus k_{75}k_{74}k_{72}k_{69} \oplus k_{73}k_{72}k_{69} \oplus \\
& k_{72}k_{71}k_{69} \oplus k_{74}k_{72}k_{71}k_{69} \oplus k_{73}k_{72}k_{71}k_{69} \oplus k_{70}k_{69} \oplus k_{78}k_{70}k_{69} \oplus \\
& k_{79}k_{78}k_{70}k_{69} \oplus k_{77}k_{76}k_{70}k_{69} \oplus k_{76}k_{72}k_{70}k_{69} \oplus k_{75}k_{74}k_{72}k_{70}k_{69} \oplus \\
& k_{71}k_{70}k_{69} \oplus k_{68} \oplus k_{79}k_{68} \oplus k_{78}k_{77}k_{68} \oplus k_{76}k_{68} \oplus k_{74}k_{68} \oplus k_{75}k_{74}k_{68} \oplus \\
& k_{72}k_{68} \oplus k_{73}k_{72}k_{68} \oplus k_{71}k_{70}k_{68} \oplus k_{79}k_{78}k_{69}k_{68} \oplus k_{67} \oplus k_{79}k_{67} \oplus k_{78}k_{67} \oplus \\
& k_{78}k_{77}k_{67} \oplus k_{79}k_{78}k_{77}k_{67} \oplus k_{77}k_{76}k_{67} \oplus k_{70}k_{67} \oplus k_{68}k_{67} \oplus k_{79}k_{68}k_{67} \oplus \\
& k_{79}k_{78}k_{68}k_{67} \oplus k_{77}k_{68}k_{67} \oplus k_{78}k_{77}k_{68}k_{67} \oplus k_{75}k_{68}k_{67} \oplus k_{76}k_{75}k_{68}k_{67} \oplus \\
& k_{73}k_{68}k_{67} \oplus k_{72}k_{68}k_{67} \oplus k_{76}k_{72}k_{68}k_{67} \oplus k_{75}k_{74}k_{72}k_{68}k_{67} \oplus k_{73}k_{72}k_{68}k_{67} \oplus \\
& k_{72}k_{71}k_{68}k_{67} \oplus k_{74}k_{72}k_{71}k_{68}k_{67} \oplus k_{73}k_{72}k_{71}k_{68}k_{67} \oplus k_{71}k_{70}k_{68}k_{67} \oplus \\
& k_{76}k_{71}k_{70}k_{68}k_{67} \oplus k_{75}k_{74}k_{71}k_{70}k_{68}k_{67} \oplus k_{69}k_{68}k_{67} \oplus k_{66} \oplus k_{79}k_{66} \oplus \\
& k_{78}k_{77}k_{66} \oplus k_{79}k_{78}k_{77}k_{66} \oplus k_{75}k_{66} \oplus k_{74}k_{66} \oplus k_{75}k_{74}k_{66} \oplus k_{72}k_{66} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{73}k_{72}k_{66} \oplus k_{75}k_{73}k_{72}k_{66} \oplus k_{74}k_{73}k_{72}k_{66} \oplus k_{71}k_{66} \oplus k_{71}k_{70}k_{66} \oplus k_{69}k_{66} \oplus \\
& k_{70}k_{69}k_{66} \oplus k_{68}k_{66} \oplus k_{79}k_{68}k_{66} \oplus k_{78}k_{77}k_{68}k_{66} \oplus k_{67}k_{66} \oplus k_{74}k_{67}k_{66} \oplus \\
& k_{73}k_{72}k_{67}k_{66} \oplus k_{69}k_{67}k_{66} \oplus k_{65} \oplus k_{79}k_{65} \oplus k_{79}k_{78}k_{65} \oplus k_{78}k_{77}k_{65} \oplus \\
& k_{79}k_{78}k_{77}k_{65} \oplus k_{68}k_{65} \oplus k_{79}k_{68}k_{65} \oplus k_{78}k_{77}k_{68}k_{65} \oplus k_{66}k_{65} \oplus k_{78}k_{66}k_{65} \oplus \\
& k_{77}k_{76}k_{66}k_{65} \oplus k_{67}k_{66}k_{65} \oplus k_{64} \oplus k_{75}k_{74}k_{64} \oplus k_{75}k_{73}k_{64} \oplus k_{72}k_{64} \oplus \\
& k_{71}k_{70}k_{64} \oplus k_{75}k_{73}k_{71}k_{70}k_{64} \oplus k_{74}k_{73}k_{71}k_{70}k_{64} \oplus k_{75}k_{72}k_{71}k_{70}k_{64} \oplus \\
& k_{74}k_{73}k_{72}k_{71}k_{70}k_{64} \oplus k_{67}k_{64} \oplus k_{65}k_{64} \oplus k_{75}k_{65}k_{64} \oplus k_{75}k_{74}k_{65}k_{64} \oplus \\
& k_{75}k_{73}k_{72}k_{65}k_{64} \oplus k_{74}k_{73}k_{72}k_{65}k_{64} \oplus k_{67}k_{65}k_{64} \oplus k_{77}k_{63} \oplus k_{76}k_{75}k_{63} \oplus \\
& k_{74}k_{63} \oplus k_{73}k_{63} \oplus k_{72}k_{63} \oplus k_{71}k_{70}k_{63} \oplus k_{73}k_{71}k_{70}k_{63} \oplus k_{72}k_{71}k_{70}k_{63} \oplus \\
& k_{79}k_{64}k_{63} \oplus k_{79}k_{78}k_{64}k_{63} \oplus k_{78}k_{77}k_{64}k_{63} \oplus k_{79}k_{78}k_{77}k_{64}k_{63} \oplus \\
& k_{79}k_{68}k_{64}k_{63} \oplus k_{78}k_{77}k_{68}k_{64}k_{63} \oplus k_{66}k_{64}k_{63} \oplus k_{79}k_{66}k_{64}k_{63} \oplus \\
& k_{78}k_{77}k_{66}k_{64}k_{63} \oplus k_{79}k_{78}k_{77}k_{66}k_{64}k_{63} \oplus k_{68}k_{66}k_{64}k_{63} \oplus k_{79}k_{68}k_{66}k_{64}k_{63} \oplus \\
& k_{78}k_{77}k_{68}k_{66}k_{64}k_{63} \oplus k_{65}k_{64}k_{63} \oplus k_{79}k_{65}k_{64}k_{63} \oplus k_{78}k_{77}k_{65}k_{64}k_{63} \oplus \\
& k_{79}k_{78}k_{77}k_{65}k_{64}k_{63} \oplus k_{68}k_{65}k_{64}k_{63} \oplus k_{79}k_{68}k_{65}k_{64}k_{63} \oplus \\
& k_{78}k_{77}k_{68}k_{65}k_{64}k_{63} \oplus k_{78}k_{62} \oplus k_{77}k_{62} \oplus k_{75}k_{62} \oplus k_{75}k_{74}k_{62} \oplus \\
& k_{77}k_{75}k_{74}k_{62} \oplus k_{76}k_{75}k_{74}k_{62} \oplus k_{73}k_{62} \oplus k_{75}k_{73}k_{72}k_{62} \oplus k_{74}k_{73}k_{72}k_{62} \oplus \\
& k_{71}k_{62} \oplus k_{72}k_{71}k_{62} \oplus k_{74}k_{69}k_{62} \oplus k_{73}k_{72}k_{69}k_{62} \oplus k_{70}k_{69}k_{62} \oplus k_{68}k_{62} \oplus \\
& k_{74}k_{68}k_{67}k_{62} \oplus k_{73}k_{72}k_{68}k_{67}k_{62} \oplus k_{66}k_{62} \oplus k_{74}k_{66}k_{62} \oplus k_{73}k_{72}k_{66}k_{62} \oplus \\
& k_{74}k_{65}k_{62} \oplus k_{73}k_{72}k_{65}k_{62} \oplus k_{64}k_{62} \oplus k_{63}k_{62} \oplus k_{64}k_{63}k_{62} \oplus k_{74}k_{64}k_{63}k_{62} \oplus \\
& k_{73}k_{72}k_{64}k_{63}k_{62} \oplus k_{77}k_{61} \oplus k_{78}k_{76}k_{61} \oplus k_{77}k_{76}k_{61} \oplus k_{79}k_{78}k_{77}k_{76}k_{61} \oplus \\
& k_{75}k_{61} \oplus k_{74}k_{61} \oplus k_{78}k_{75}k_{74}k_{61} \oplus k_{77}k_{76}k_{75}k_{74}k_{61} \oplus k_{79}k_{78}k_{73}k_{61} \oplus \\
& k_{77}k_{73}k_{61} \oplus k_{78}k_{76}k_{73}k_{61} \oplus k_{77}k_{76}k_{73}k_{61} \oplus k_{75}k_{73}k_{61} \oplus k_{75}k_{74}k_{73}k_{61} \oplus \\
& k_{78}k_{75}k_{74}k_{73}k_{61} \oplus k_{77}k_{76}k_{75}k_{74}k_{73}k_{61} \oplus k_{75}k_{73}k_{72}k_{61} \oplus k_{74}k_{73}k_{72}k_{61} \oplus \\
& k_{72}k_{71}k_{61} \oplus k_{79}k_{78}k_{72}k_{71}k_{61} \oplus k_{77}k_{72}k_{71}k_{61} \oplus k_{78}k_{76}k_{72}k_{71}k_{61} \oplus \\
& k_{77}k_{76}k_{72}k_{71}k_{61} \oplus k_{75}k_{72}k_{71}k_{61} \oplus k_{74}k_{72}k_{71}k_{61} \oplus k_{75}k_{74}k_{72}k_{71}k_{61} \oplus \\
& k_{78}k_{75}k_{74}k_{72}k_{71}k_{61} \oplus k_{77}k_{76}k_{75}k_{74}k_{72}k_{71}k_{61} \oplus k_{73}k_{72}k_{71}k_{61} \oplus \\
& k_{74}k_{73}k_{72}k_{71}k_{61} \oplus k_{76}k_{74}k_{73}k_{72}k_{71}k_{61} \oplus k_{75}k_{74}k_{73}k_{72}k_{71}k_{61} \oplus k_{71}k_{70}k_{61} \oplus \\
& k_{69}k_{61} \oplus k_{72}k_{70}k_{69}k_{61} \oplus k_{71}k_{70}k_{69}k_{61} \oplus k_{68}k_{61} \oplus k_{68}k_{67}k_{61} \oplus k_{66}k_{61} \oplus \\
& k_{64}k_{61} \oplus k_{79}k_{64}k_{61} \oplus k_{78}k_{77}k_{64}k_{61} \oplus k_{75}k_{64}k_{61} \oplus k_{73}k_{64}k_{61} \oplus \\
& k_{74}k_{73}k_{64}k_{61} \oplus k_{72}k_{71}k_{64}k_{61} \oplus k_{62}k_{61} \oplus k_{77}k_{62}k_{61} \oplus k_{75}k_{62}k_{61} \oplus \\
& k_{76}k_{75}k_{62}k_{61} \oplus k_{74}k_{62}k_{61} \oplus k_{75}k_{74}k_{62}k_{61} \oplus k_{72}k_{62}k_{61} \oplus k_{75}k_{73}k_{72}k_{62}k_{61} \oplus \\
& k_{74}k_{73}k_{72}k_{62}k_{61} \oplus k_{72}k_{71}k_{62}k_{61} \oplus k_{71}k_{70}k_{62}k_{61} \oplus k_{73}k_{71}k_{70}k_{62}k_{61} \oplus \\
& k_{72}k_{71}k_{70}k_{62}k_{61} \oplus k_{66}k_{64}k_{62}k_{61} \oplus k_{65}k_{64}k_{62}k_{61} \oplus k_{63}k_{62}k_{61} \oplus k_{79}k_{60} \oplus \\
& k_{78}k_{77}k_{60} \oplus k_{78}k_{76}k_{60} \oplus k_{79}k_{75}k_{60} \oplus k_{78}k_{77}k_{75}k_{60} \oplus k_{76}k_{75}k_{60} \oplus k_{74}k_{60} \oplus \\
& k_{78}k_{75}k_{74}k_{60} \oplus k_{77}k_{75}k_{74}k_{60} \oplus k_{76}k_{75}k_{74}k_{60} \oplus k_{77}k_{76}k_{75}k_{74}k_{60} \oplus \\
& k_{78}k_{73}k_{60} \oplus k_{79}k_{78}k_{73}k_{60} \oplus k_{77}k_{76}k_{73}k_{60} \oplus k_{74}k_{73}k_{60} \oplus k_{79}k_{74}k_{73}k_{60} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{78}k_{77}k_{74}k_{73}k_{60} \oplus k_{72}k_{60} \oplus k_{73}k_{72}k_{60} \oplus k_{72}k_{71}k_{60} \oplus k_{78}k_{72}k_{71}k_{60} \oplus \\
& k_{79}k_{78}k_{72}k_{71}k_{60} \oplus k_{77}k_{76}k_{72}k_{71}k_{60} \oplus k_{74}k_{72}k_{71}k_{60} \oplus k_{73}k_{72}k_{71}k_{60} \oplus \\
& k_{71}k_{70}k_{60} \oplus k_{73}k_{71}k_{70}k_{60} \oplus k_{72}k_{71}k_{70}k_{60} \oplus k_{69}k_{60} \oplus k_{79}k_{78}k_{69}k_{60} \oplus \\
& k_{75}k_{69}k_{60} \oplus k_{74}k_{73}k_{69}k_{60} \oplus k_{70}k_{69}k_{60} \oplus k_{68}k_{60} \oplus k_{69}k_{68}k_{60} \oplus k_{69}k_{67}k_{60} \oplus \\
& k_{79}k_{78}k_{68}k_{67}k_{60} \oplus k_{75}k_{68}k_{67}k_{60} \oplus k_{74}k_{73}k_{68}k_{67}k_{60} \oplus k_{70}k_{68}k_{67}k_{60} \oplus \\
& k_{69}k_{68}k_{67}k_{60} \oplus k_{66}k_{60} \oplus k_{77}k_{66}k_{60} \oplus k_{75}k_{66}k_{60} \oplus k_{76}k_{75}k_{66}k_{60} \oplus \\
& k_{74}k_{73}k_{66}k_{60} \oplus k_{66}k_{65}k_{60} \oplus k_{69}k_{66}k_{65}k_{60} \oplus k_{68}k_{67}k_{66}k_{65}k_{60} \oplus k_{64}k_{60} \oplus \\
& k_{79}k_{64}k_{60} \oplus k_{77}k_{64}k_{60} \oplus k_{78}k_{77}k_{64}k_{60} \oplus k_{76}k_{64}k_{60} \oplus k_{75}k_{64}k_{60} \oplus \\
& k_{76}k_{75}k_{64}k_{60} \oplus k_{75}k_{74}k_{64}k_{60} \oplus k_{73}k_{64}k_{60} \oplus k_{74}k_{73}k_{64}k_{60} \oplus k_{72}k_{71}k_{64}k_{60} \oplus \\
& k_{69}k_{64}k_{60} \oplus k_{68}k_{67}k_{64}k_{60} \oplus k_{66}k_{64}k_{60} \oplus k_{77}k_{65}k_{64}k_{60} \oplus k_{76}k_{75}k_{65}k_{64}k_{60} \oplus \\
& k_{63}k_{60} \oplus k_{69}k_{62}k_{60} \oplus k_{68}k_{67}k_{62}k_{60} \oplus k_{66}k_{62}k_{60} \oplus k_{61}k_{60} \oplus k_{77}k_{61}k_{60} \oplus \\
& k_{76}k_{61}k_{60} \oplus k_{77}k_{76}k_{61}k_{60} \oplus k_{75}k_{61}k_{60} \oplus k_{74}k_{61}k_{60} \oplus k_{75}k_{74}k_{61}k_{60} \oplus \\
& k_{77}k_{75}k_{74}k_{61}k_{60} \oplus k_{76}k_{75}k_{74}k_{61}k_{60} \oplus k_{73}k_{61}k_{60} \oplus k_{74}k_{73}k_{61}k_{60} \oplus \\
& k_{73}k_{72}k_{61}k_{60} \oplus k_{71}k_{61}k_{60} \oplus k_{72}k_{71}k_{61}k_{60} \oplus k_{70}k_{69}k_{61}k_{60} \oplus k_{68}k_{61}k_{60} \oplus \\
& k_{64}k_{61}k_{60} \oplus k_{63}k_{61}k_{60} \oplus k_{62}k_{61}k_{60} \oplus k_{74}k_{62}k_{61}k_{60} \oplus k_{73}k_{72}k_{62}k_{61}k_{60} \oplus \\
& k_{59} \oplus k_{78}k_{59} \oplus k_{79}k_{78}k_{59} \oplus k_{76}k_{59} \oplus k_{76}k_{75}k_{59} \oplus k_{75}k_{74}k_{59} \oplus \\
& k_{77}k_{75}k_{74}k_{59} \oplus k_{76}k_{75}k_{74}k_{59} \oplus k_{66}k_{59} \oplus k_{64}k_{59} \oplus k_{79}k_{64}k_{59} \oplus \\
& k_{78}k_{77}k_{64}k_{59} \oplus k_{73}k_{64}k_{59} \oplus k_{72}k_{71}k_{64}k_{59} \oplus k_{63}k_{59} \oplus k_{62}k_{61}k_{59} \oplus \\
& k_{77}k_{60}k_{59} \oplus k_{78}k_{76}k_{60}k_{59} \oplus k_{77}k_{76}k_{60}k_{59} \oplus k_{79}k_{78}k_{77}k_{76}k_{60}k_{59} \oplus \\
& k_{74}k_{60}k_{59} \oplus k_{78}k_{75}k_{74}k_{60}k_{59} \oplus k_{77}k_{76}k_{75}k_{74}k_{60}k_{59} \oplus k_{79}k_{78}k_{73}k_{60}k_{59} \oplus \\
& k_{77}k_{73}k_{60}k_{59} \oplus k_{78}k_{76}k_{73}k_{60}k_{59} \oplus k_{77}k_{76}k_{73}k_{60}k_{59} \oplus k_{75}k_{73}k_{60}k_{59} \oplus \\
& k_{74}k_{73}k_{60}k_{59} \oplus k_{75}k_{74}k_{73}k_{60}k_{59} \oplus k_{78}k_{75}k_{74}k_{73}k_{60}k_{59} \oplus \\
& k_{77}k_{76}k_{75}k_{74}k_{73}k_{60}k_{59} \oplus k_{75}k_{73}k_{72}k_{60}k_{59} \oplus k_{74}k_{73}k_{72}k_{60}k_{59} \oplus k_{71}k_{60}k_{59} \oplus \\
& k_{72}k_{71}k_{60}k_{59} \oplus k_{79}k_{78}k_{72}k_{71}k_{60}k_{59} \oplus k_{77}k_{72}k_{71}k_{60}k_{59} \oplus \\
& k_{78}k_{76}k_{72}k_{71}k_{60}k_{59} \oplus k_{77}k_{76}k_{72}k_{71}k_{60}k_{59} \oplus k_{75}k_{72}k_{71}k_{60}k_{59} \oplus \\
& k_{74}k_{72}k_{71}k_{60}k_{59} \oplus k_{75}k_{74}k_{72}k_{71}k_{60}k_{59} \oplus k_{78}k_{75}k_{74}k_{72}k_{71}k_{60}k_{59} \oplus \\
& k_{77}k_{76}k_{75}k_{74}k_{72}k_{71}k_{60}k_{59} \oplus k_{73}k_{72}k_{71}k_{60}k_{59} \oplus k_{74}k_{73}k_{72}k_{71}k_{60}k_{59} \oplus \\
& k_{76}k_{74}k_{73}k_{72}k_{71}k_{60}k_{59} \oplus k_{75}k_{74}k_{73}k_{72}k_{71}k_{60}k_{59} \oplus k_{71}k_{70}k_{60}k_{59} \oplus \\
& k_{70}k_{69}k_{60}k_{59} \oplus k_{72}k_{70}k_{69}k_{60}k_{59} \oplus k_{71}k_{70}k_{69}k_{60}k_{59} \oplus k_{68}k_{60}k_{59} \oplus \\
& k_{73}k_{64}k_{60}k_{59} \oplus k_{72}k_{71}k_{64}k_{60}k_{59} \oplus k_{62}k_{60}k_{59} \oplus k_{75}k_{62}k_{60}k_{59} \oplus \\
& k_{75}k_{74}k_{62}k_{60}k_{59} \oplus k_{73}k_{62}k_{60}k_{59} \oplus k_{75}k_{73}k_{72}k_{62}k_{60}k_{59} \oplus \\
& k_{74}k_{73}k_{72}k_{62}k_{60}k_{59} \oplus k_{72}k_{71}k_{62}k_{60}k_{59} \oplus k_{73}k_{61}k_{60}k_{59} \oplus k_{72}k_{71}k_{61}k_{60}k_{59} \oplus \\
& k_{77}k_{58} \oplus k_{76}k_{58} \oplus k_{76}k_{75}k_{58} \oplus k_{74}k_{58} \oplus k_{79}k_{74}k_{58} \oplus k_{78}k_{74}k_{58} \oplus \\
& k_{78}k_{77}k_{74}k_{58} \oplus k_{77}k_{76}k_{74}k_{58} \oplus k_{75}k_{74}k_{58} \oplus k_{74}k_{72}k_{58} \oplus k_{73}k_{72}k_{58} \oplus \\
& k_{79}k_{73}k_{72}k_{58} \oplus k_{78}k_{73}k_{72}k_{58} \oplus k_{78}k_{77}k_{73}k_{72}k_{58} \oplus k_{77}k_{76}k_{73}k_{72}k_{58} \oplus \\
& k_{71}k_{58} \oplus k_{72}k_{71}k_{58} \oplus k_{74}k_{71}k_{70}k_{58} \oplus k_{73}k_{71}k_{70}k_{58} \oplus k_{72}k_{71}k_{70}k_{58} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{73}k_{72}k_{71}k_{70}k_{58} \oplus k_{70}k_{69}k_{58} \oplus k_{64}k_{58} \oplus k_{79}k_{64}k_{58} \oplus k_{77}k_{64}k_{58} \oplus \\
& k_{78}k_{77}k_{64}k_{58} \oplus k_{75}k_{64}k_{58} \oplus k_{76}k_{75}k_{64}k_{58} \oplus k_{74}k_{73}k_{64}k_{58} \oplus k_{64}k_{63}k_{58} \oplus \\
& k_{76}k_{62}k_{58} \oplus k_{75}k_{74}k_{62}k_{58} \oplus k_{61}k_{58} \oplus k_{78}k_{61}k_{58} \oplus k_{77}k_{76}k_{61}k_{58} \oplus \\
& k_{74}k_{61}k_{58} \oplus k_{73}k_{61}k_{58} \oplus k_{73}k_{72}k_{61}k_{58} \oplus k_{72}k_{71}k_{61}k_{58} \oplus k_{64}k_{61}k_{58} \oplus \\
& k_{79}k_{64}k_{61}k_{58} \oplus k_{78}k_{77}k_{64}k_{61}k_{58} \oplus k_{75}k_{64}k_{61}k_{58} \oplus k_{74}k_{73}k_{64}k_{61}k_{58} \oplus \\
& k_{77}k_{76}k_{60}k_{58} \oplus k_{75}k_{60}k_{58} \oplus k_{74}k_{60}k_{58} \oplus k_{75}k_{74}k_{60}k_{58} \oplus k_{77}k_{75}k_{74}k_{60}k_{58} \oplus \\
& k_{76}k_{75}k_{74}k_{60}k_{58} \oplus k_{73}k_{60}k_{58} \oplus k_{74}k_{73}k_{60}k_{58} \oplus k_{76}k_{74}k_{73}k_{60}k_{58} \oplus \\
& k_{75}k_{74}k_{73}k_{60}k_{58} \oplus k_{72}k_{60}k_{58} \oplus k_{73}k_{72}k_{60}k_{58} \oplus k_{72}k_{71}k_{60}k_{58} \oplus k_{70}k_{60}k_{58} \oplus \\
& k_{71}k_{70}k_{60}k_{58} \oplus k_{69}k_{68}k_{60}k_{58} \oplus k_{64}k_{60}k_{58} \oplus k_{79}k_{64}k_{60}k_{58} \oplus \\
& k_{78}k_{77}k_{64}k_{60}k_{58} \oplus k_{75}k_{64}k_{60}k_{58} \oplus k_{74}k_{73}k_{64}k_{60}k_{58} \oplus k_{63}k_{60}k_{58} \oplus \\
& k_{62}k_{61}k_{60}k_{58} \oplus k_{59}k_{58} \oplus k_{79}k_{59}k_{58} \oplus k_{78}k_{77}k_{59}k_{58} \oplus k_{76}k_{59}k_{58} \oplus \\
& k_{78}k_{76}k_{59}k_{58} \oplus k_{77}k_{76}k_{59}k_{58} \oplus k_{75}k_{74}k_{59}k_{58} \oplus k_{78}k_{75}k_{74}k_{59}k_{58} \oplus \\
& k_{77}k_{76}k_{75}k_{74}k_{59}k_{58} \oplus k_{73}k_{59}k_{58} \oplus k_{78}k_{73}k_{59}k_{58} \oplus k_{79}k_{78}k_{73}k_{59}k_{58} \oplus \\
& k_{77}k_{76}k_{73}k_{59}k_{58} \oplus k_{74}k_{73}k_{59}k_{58} \oplus k_{78}k_{72}k_{71}k_{59}k_{58} \oplus k_{79}k_{78}k_{72}k_{71}k_{59}k_{58} \oplus \\
& k_{77}k_{76}k_{72}k_{71}k_{59}k_{58} \oplus k_{74}k_{72}k_{71}k_{59}k_{58} \oplus k_{73}k_{72}k_{71}k_{59}k_{58} \oplus \\
& k_{73}k_{71}k_{70}k_{59}k_{58} \oplus k_{72}k_{71}k_{70}k_{59}k_{58} \oplus k_{68}k_{59}k_{58} \oplus k_{79}k_{64}k_{59}k_{58} \oplus \\
& k_{78}k_{77}k_{64}k_{59}k_{58} \oplus k_{75}k_{64}k_{59}k_{58} \oplus k_{73}k_{64}k_{59}k_{58} \oplus k_{74}k_{73}k_{64}k_{59}k_{58} \oplus \\
& k_{72}k_{71}k_{64}k_{59}k_{58} \oplus k_{62}k_{59}k_{58} \oplus k_{78}k_{61}k_{59}k_{58} \oplus k_{77}k_{76}k_{61}k_{59}k_{58} \oplus \\
& k_{74}k_{61}k_{59}k_{58} \oplus k_{73}k_{61}k_{59}k_{58} \oplus k_{73}k_{72}k_{61}k_{59}k_{58} \oplus k_{72}k_{71}k_{61}k_{59}k_{58} \oplus \\
& k_{64}k_{61}k_{59}k_{58} \oplus k_{60}k_{59}k_{58} \oplus k_{78}k_{60}k_{59}k_{58} \oplus k_{77}k_{76}k_{60}k_{59}k_{58} \oplus \\
& k_{74}k_{60}k_{59}k_{58} \oplus k_{73}k_{60}k_{59}k_{58} \oplus k_{73}k_{72}k_{60}k_{59}k_{58} \oplus k_{72}k_{71}k_{60}k_{59}k_{58} \oplus \\
& k_{64}k_{60}k_{59}k_{58} \oplus k_{61}k_{60}k_{59}k_{58} \oplus k_{57} \oplus k_{79}k_{57} \oplus k_{78}k_{57} \oplus k_{79}k_{78}k_{57} \oplus \\
& k_{77}k_{57} \oplus k_{78}k_{77}k_{57} \oplus k_{79}k_{74}k_{57} \oplus k_{78}k_{77}k_{74}k_{57} \oplus k_{76}k_{74}k_{57} \oplus \\
& k_{77}k_{75}k_{74}k_{57} \oplus k_{76}k_{75}k_{74}k_{57} \oplus k_{76}k_{73}k_{57} \oplus k_{75}k_{74}k_{73}k_{57} \oplus k_{72}k_{57} \oplus \\
& k_{76}k_{72}k_{57} \oplus k_{75}k_{74}k_{72}k_{57} \oplus k_{73}k_{72}k_{57} \oplus k_{79}k_{73}k_{72}k_{57} \oplus k_{78}k_{77}k_{73}k_{72}k_{57} \oplus \\
& k_{76}k_{73}k_{72}k_{57} \oplus k_{75}k_{73}k_{72}k_{57} \oplus k_{74}k_{73}k_{72}k_{57} \oplus k_{75}k_{74}k_{73}k_{72}k_{57} \oplus k_{71}k_{57} \oplus \\
& k_{76}k_{72}k_{71}k_{57} \oplus k_{74}k_{72}k_{71}k_{57} \oplus k_{75}k_{74}k_{72}k_{71}k_{57} \oplus k_{73}k_{72}k_{71}k_{57} \oplus \\
& k_{71}k_{70}k_{57} \oplus k_{76}k_{71}k_{70}k_{57} \oplus k_{75}k_{74}k_{71}k_{70}k_{57} \oplus k_{70}k_{69}k_{57} \oplus k_{67}k_{57} \oplus \\
& k_{66}k_{57} \oplus k_{77}k_{64}k_{57} \oplus k_{76}k_{75}k_{64}k_{57} \oplus k_{63}k_{57} \oplus k_{66}k_{64}k_{63}k_{57} \oplus \\
& k_{65}k_{64}k_{63}k_{57} \oplus k_{74}k_{62}k_{57} \oplus k_{73}k_{72}k_{62}k_{57} \oplus k_{64}k_{62}k_{57} \oplus k_{61}k_{57} \oplus \\
& k_{75}k_{61}k_{57} \oplus k_{74}k_{61}k_{57} \oplus k_{74}k_{73}k_{61}k_{57} \oplus k_{73}k_{72}k_{61}k_{57} \oplus k_{62}k_{61}k_{57} \oplus \\
& k_{60}k_{57} \oplus k_{74}k_{60}k_{57} \oplus k_{73}k_{72}k_{60}k_{57} \oplus k_{64}k_{60}k_{57} \oplus k_{62}k_{60}k_{57} \oplus k_{61}k_{60}k_{57} \oplus \\
& k_{64}k_{61}k_{60}k_{57} \oplus k_{59}k_{57} \oplus k_{60}k_{59}k_{57} \oplus k_{75}k_{60}k_{59}k_{57} \oplus k_{74}k_{60}k_{59}k_{57} \oplus \\
& k_{74}k_{73}k_{60}k_{59}k_{57} \oplus k_{73}k_{72}k_{60}k_{59}k_{57} \oplus k_{77}k_{76}k_{58}k_{57} \oplus k_{76}k_{75}k_{58}k_{57} \oplus \\
& k_{74}k_{58}k_{57} \oplus k_{77}k_{75}k_{74}k_{58}k_{57} \oplus k_{76}k_{75}k_{74}k_{58}k_{57} \oplus k_{73}k_{58}k_{57} \oplus \\
& k_{73}k_{72}k_{58}k_{57} \oplus k_{72}k_{71}k_{58}k_{57} \oplus k_{66}k_{58}k_{57} \oplus k_{75}k_{64}k_{58}k_{57} \oplus k_{73}k_{64}k_{58}k_{57} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{74}k_{73}k_{64}k_{58}k_{57} \oplus k_{72}k_{71}k_{64}k_{58}k_{57} \oplus k_{63}k_{58}k_{57} \oplus k_{61}k_{58}k_{57} \oplus \\
& k_{62}k_{61}k_{58}k_{57} \oplus k_{71}k_{60}k_{58}k_{57} \oplus k_{70}k_{69}k_{60}k_{58}k_{57} \oplus k_{66}k_{60}k_{58}k_{57} \oplus \\
& k_{64}k_{60}k_{58}k_{57} \oplus k_{75}k_{59}k_{58}k_{57} \oplus k_{74}k_{59}k_{58}k_{57} \oplus k_{74}k_{73}k_{59}k_{58}k_{57} \oplus \\
& k_{73}k_{72}k_{59}k_{58}k_{57} \oplus k_{71}k_{59}k_{58}k_{57} \oplus k_{70}k_{69}k_{59}k_{58}k_{57} \oplus k_{66}k_{59}k_{58}k_{57} \oplus \\
& k_{64}k_{59}k_{58}k_{57} \oplus k_{61}k_{59}k_{58}k_{57} \oplus k_{60}k_{59}k_{58}k_{57} \oplus k_{56} \oplus k_{78}k_{56} \oplus k_{79}k_{78}k_{56} \oplus \\
& k_{77}k_{56} \oplus k_{76}k_{75}k_{56} \oplus k_{74}k_{56} \oplus k_{78}k_{74}k_{56} \oplus k_{79}k_{78}k_{74}k_{56} \oplus k_{77}k_{74}k_{56} \oplus \\
& k_{77}k_{76}k_{74}k_{56} \oplus k_{77}k_{75}k_{74}k_{56} \oplus k_{73}k_{56} \oplus k_{76}k_{73}k_{56} \oplus k_{76}k_{75}k_{73}k_{56} \oplus \\
& k_{78}k_{72}k_{56} \oplus k_{77}k_{72}k_{56} \oplus k_{79}k_{78}k_{76}k_{72}k_{56} \oplus k_{77}k_{76}k_{72}k_{56} \oplus k_{75}k_{74}k_{72}k_{56} \oplus \\
& k_{79}k_{78}k_{75}k_{74}k_{72}k_{56} \oplus k_{73}k_{72}k_{56} \oplus k_{78}k_{73}k_{72}k_{56} \oplus k_{79}k_{78}k_{73}k_{72}k_{56} \oplus \\
& k_{77}k_{76}k_{73}k_{72}k_{56} \oplus k_{75}k_{73}k_{72}k_{56} \oplus k_{74}k_{73}k_{72}k_{56} \oplus k_{76}k_{74}k_{73}k_{72}k_{56} \oplus \\
& k_{75}k_{74}k_{73}k_{72}k_{56} \oplus k_{71}k_{56} \oplus k_{77}k_{72}k_{71}k_{56} \oplus k_{76}k_{72}k_{71}k_{56} \oplus k_{74}k_{72}k_{71}k_{56} \oplus \\
& k_{73}k_{72}k_{71}k_{56} \oplus k_{76}k_{74}k_{73}k_{72}k_{71}k_{56} \oplus k_{75}k_{74}k_{73}k_{72}k_{71}k_{56} \oplus k_{78}k_{71}k_{70}k_{56} \oplus \\
& k_{77}k_{71}k_{70}k_{56} \oplus k_{79}k_{78}k_{76}k_{71}k_{70}k_{56} \oplus k_{77}k_{76}k_{71}k_{70}k_{56} \oplus k_{75}k_{74}k_{71}k_{70}k_{56} \oplus \\
& k_{79}k_{78}k_{75}k_{74}k_{71}k_{70}k_{56} \oplus k_{73}k_{71}k_{70}k_{56} \oplus k_{77}k_{73}k_{71}k_{70}k_{56} \oplus \\
& k_{76}k_{75}k_{73}k_{71}k_{70}k_{56} \oplus k_{76}k_{74}k_{73}k_{71}k_{70}k_{56} \oplus k_{75}k_{74}k_{73}k_{71}k_{70}k_{56} \oplus \\
& k_{72}k_{71}k_{70}k_{56} \oplus k_{77}k_{72}k_{71}k_{70}k_{56} \oplus k_{76}k_{75}k_{72}k_{71}k_{70}k_{56} \oplus k_{69}k_{56} \oplus \\
& k_{70}k_{69}k_{56} \oplus k_{68}k_{56} \oplus k_{67}k_{56} \oplus k_{68}k_{67}k_{56} \oplus k_{70}k_{66}k_{56} \oplus k_{69}k_{68}k_{66}k_{56} \oplus \\
& k_{65}k_{56} \oplus k_{68}k_{65}k_{56} \oplus k_{66}k_{65}k_{56} \oplus k_{67}k_{66}k_{65}k_{56} \oplus k_{74}k_{64}k_{56} \oplus k_{72}k_{64}k_{56} \oplus \\
& k_{73}k_{72}k_{64}k_{56} \oplus k_{71}k_{70}k_{64}k_{56} \oplus k_{63}k_{56} \oplus k_{78}k_{62}k_{56} \oplus k_{77}k_{76}k_{62}k_{56} \oplus \\
& k_{74}k_{62}k_{56} \oplus k_{73}k_{62}k_{56} \oplus k_{72}k_{62}k_{56} \oplus k_{73}k_{72}k_{62}k_{56} \oplus k_{72}k_{71}k_{62}k_{56} \oplus \\
& k_{71}k_{70}k_{62}k_{56} \oplus k_{78}k_{61}k_{56} \oplus k_{77}k_{76}k_{61}k_{56} \oplus k_{73}k_{61}k_{56} \oplus k_{78}k_{73}k_{61}k_{56} \oplus \\
& k_{77}k_{76}k_{73}k_{61}k_{56} \oplus k_{72}k_{71}k_{61}k_{56} \oplus k_{78}k_{72}k_{71}k_{61}k_{56} \oplus k_{77}k_{76}k_{72}k_{71}k_{61}k_{56} \oplus \\
& k_{64}k_{61}k_{56} \oplus k_{73}k_{64}k_{61}k_{56} \oplus k_{72}k_{71}k_{64}k_{61}k_{56} \oplus k_{62}k_{61}k_{56} \oplus k_{60}k_{56} \oplus \\
& k_{78}k_{60}k_{56} \oplus k_{79}k_{78}k_{60}k_{56} \oplus k_{77}k_{76}k_{60}k_{56} \oplus k_{75}k_{60}k_{56} \oplus k_{74}k_{60}k_{56} \oplus \\
& k_{73}k_{60}k_{56} \oplus k_{78}k_{73}k_{60}k_{56} \oplus k_{79}k_{78}k_{73}k_{60}k_{56} \oplus k_{77}k_{76}k_{73}k_{60}k_{56} \oplus \\
& k_{74}k_{73}k_{60}k_{56} \oplus k_{72}k_{60}k_{56} \oplus k_{73}k_{72}k_{60}k_{56} \oplus k_{72}k_{71}k_{60}k_{56} \oplus \\
& k_{78}k_{72}k_{71}k_{60}k_{56} \oplus k_{79}k_{78}k_{72}k_{71}k_{60}k_{56} \oplus k_{77}k_{76}k_{72}k_{71}k_{60}k_{56} \oplus k_{70}k_{60}k_{56} \oplus \\
& k_{71}k_{70}k_{60}k_{56} \oplus k_{69}k_{68}k_{60}k_{56} \oplus k_{65}k_{60}k_{56} \oplus k_{73}k_{64}k_{60}k_{56} \oplus \\
& k_{72}k_{71}k_{64}k_{60}k_{56} \oplus k_{62}k_{60}k_{56} \oplus k_{61}k_{60}k_{56} \oplus k_{73}k_{61}k_{60}k_{56} \oplus k_{72}k_{61}k_{60}k_{56} \oplus \\
& k_{72}k_{71}k_{61}k_{60}k_{56} \oplus k_{71}k_{70}k_{61}k_{60}k_{56} \oplus k_{64}k_{61}k_{60}k_{56} \oplus k_{77}k_{59}k_{56} \oplus \\
& k_{76}k_{75}k_{59}k_{56} \oplus k_{73}k_{60}k_{59}k_{56} \oplus k_{78}k_{73}k_{60}k_{59}k_{56} \oplus k_{77}k_{76}k_{73}k_{60}k_{59}k_{56} \oplus \\
& k_{72}k_{71}k_{60}k_{59}k_{56} \oplus k_{78}k_{72}k_{71}k_{60}k_{59}k_{56} \oplus k_{77}k_{76}k_{72}k_{71}k_{60}k_{59}k_{56} \oplus \\
& k_{73}k_{64}k_{60}k_{59}k_{56} \oplus k_{72}k_{71}k_{64}k_{60}k_{59}k_{56} \oplus k_{65}k_{58}k_{56} \oplus k_{78}k_{59}k_{58}k_{56} \oplus \\
& k_{77}k_{76}k_{59}k_{58}k_{56} \oplus k_{74}k_{59}k_{58}k_{56} \oplus k_{78}k_{73}k_{59}k_{58}k_{56} \oplus k_{77}k_{76}k_{73}k_{59}k_{58}k_{56} \oplus \\
& k_{72}k_{59}k_{58}k_{56} \oplus k_{73}k_{72}k_{59}k_{58}k_{56} \oplus k_{78}k_{72}k_{71}k_{59}k_{58}k_{56} \oplus \\
& k_{77}k_{76}k_{72}k_{71}k_{59}k_{58}k_{56} \oplus k_{71}k_{70}k_{59}k_{58}k_{56} \oplus k_{64}k_{59}k_{58}k_{56} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{73}k_{64}k_{59}k_{58}k_{56} \oplus k_{72}k_{71}k_{64}k_{59}k_{58}k_{56} \oplus k_{61}k_{59}k_{58}k_{56} \oplus k_{78}k_{61}k_{59}k_{58}k_{56} \oplus \\
& k_{77}k_{76}k_{61}k_{59}k_{58}k_{56} \oplus k_{64}k_{61}k_{59}k_{58}k_{56} \oplus k_{60}k_{59}k_{58}k_{56} \oplus k_{78}k_{60}k_{59}k_{58}k_{56} \oplus \\
& k_{77}k_{76}k_{60}k_{59}k_{58}k_{56} \oplus k_{64}k_{60}k_{59}k_{58}k_{56} \oplus k_{76}k_{57}k_{56} \oplus k_{75}k_{74}k_{57}k_{56} \oplus \\
& k_{61}k_{57}k_{56} \oplus k_{60}k_{57}k_{56} \oplus k_{70}k_{60}k_{57}k_{56} \oplus k_{69}k_{68}k_{60}k_{57}k_{56} \oplus k_{60}k_{59}k_{57}k_{56} \oplus \\
& k_{58}k_{57}k_{56} \oplus k_{77}k_{58}k_{57}k_{56} \oplus k_{76}k_{75}k_{58}k_{57}k_{56} \oplus k_{60}k_{58}k_{57}k_{56} \oplus \\
& k_{59}k_{58}k_{57}k_{56} \oplus k_{55} \oplus k_{79}k_{55} \oplus k_{78}k_{55} \oplus k_{79}k_{78}k_{55} \oplus k_{78}k_{77}k_{55} \oplus \\
& k_{76}k_{75}k_{55} \oplus k_{77}k_{75}k_{74}k_{55} \oplus k_{76}k_{75}k_{74}k_{55} \oplus k_{73}k_{55} \oplus k_{72}k_{55} \oplus k_{73}k_{72}k_{55} \oplus \\
& k_{70}k_{55} \oplus k_{71}k_{70}k_{55} \oplus k_{73}k_{71}k_{70}k_{55} \oplus k_{72}k_{71}k_{70}k_{55} \oplus k_{69}k_{55} \oplus k_{69}k_{68}k_{55} \oplus \\
& k_{68}k_{67}k_{55} \oplus k_{65}k_{55} \oplus k_{69}k_{65}k_{55} \oplus k_{68}k_{67}k_{65}k_{55} \oplus k_{64}k_{55} \oplus k_{63}k_{55} \oplus \\
& k_{74}k_{62}k_{55} \oplus k_{73}k_{72}k_{62}k_{55} \oplus k_{72}k_{61}k_{55} \oplus k_{71}k_{61}k_{55} \oplus k_{71}k_{70}k_{61}k_{55} \oplus \\
& k_{70}k_{69}k_{61}k_{55} \oplus k_{60}k_{55} \oplus k_{65}k_{60}k_{55} \oplus k_{61}k_{60}k_{55} \oplus k_{74}k_{61}k_{60}k_{55} \oplus \\
& k_{73}k_{72}k_{61}k_{60}k_{55} \oplus k_{59}k_{55} \oplus k_{72}k_{60}k_{59}k_{55} \oplus k_{71}k_{60}k_{59}k_{55} \oplus \\
& k_{71}k_{70}k_{60}k_{59}k_{55} \oplus k_{70}k_{69}k_{60}k_{59}k_{55} \oplus k_{62}k_{60}k_{59}k_{55} \oplus k_{61}k_{60}k_{59}k_{55} \oplus \\
& k_{60}k_{58}k_{55} \oplus k_{65}k_{57}k_{55} \oplus k_{58}k_{57}k_{55} \oplus k_{79}k_{78}k_{56}k_{55} \oplus k_{77}k_{56}k_{55} \oplus \\
& k_{75}k_{56}k_{55} \oplus k_{76}k_{75}k_{56}k_{55} \oplus k_{74}k_{56}k_{55} \oplus k_{73}k_{56}k_{55} \oplus k_{72}k_{56}k_{55} \oplus \\
& k_{76}k_{72}k_{56}k_{55} \oplus k_{75}k_{74}k_{72}k_{56}k_{55} \oplus k_{72}k_{71}k_{56}k_{55} \oplus k_{74}k_{72}k_{71}k_{56}k_{55} \oplus \\
& k_{73}k_{72}k_{71}k_{56}k_{55} \oplus k_{71}k_{70}k_{56}k_{55} \oplus k_{76}k_{71}k_{70}k_{56}k_{55} \oplus k_{75}k_{74}k_{71}k_{70}k_{56}k_{55} \oplus \\
& k_{69}k_{56}k_{55} \oplus k_{68}k_{67}k_{56}k_{55} \oplus k_{65}k_{56}k_{55} \oplus k_{74}k_{62}k_{56}k_{55} \oplus k_{73}k_{72}k_{62}k_{56}k_{55} \oplus \\
& k_{75}k_{60}k_{56}k_{55} \oplus k_{74}k_{73}k_{60}k_{56}k_{55} \oplus k_{70}k_{60}k_{56}k_{55} \oplus k_{69}k_{68}k_{60}k_{56}k_{55} \oplus \\
& k_{64}k_{60}k_{56}k_{55} \oplus k_{62}k_{60}k_{56}k_{55} \oplus k_{57}k_{56}k_{55} \oplus k_{60}k_{57}k_{56}k_{55} \oplus k_{54} \oplus \\
& k_{79}k_{78}k_{54} \oplus k_{76}k_{54} \oplus k_{74}k_{54} \oplus k_{75}k_{74}k_{54} \oplus k_{73}k_{54} \oplus k_{72}k_{54} \oplus k_{73}k_{72}k_{54} \oplus \\
& k_{72}k_{71}k_{54} \oplus k_{71}k_{70}k_{54} \oplus k_{67}k_{54} \oplus k_{66}k_{54} \oplus k_{74}k_{66}k_{54} \oplus k_{73}k_{72}k_{66}k_{54} \oplus \\
& k_{69}k_{65}k_{54} \oplus k_{68}k_{67}k_{65}k_{54} \oplus k_{64}k_{63}k_{54} \oplus k_{66}k_{64}k_{63}k_{54} \oplus k_{65}k_{64}k_{63}k_{54} \oplus \\
& k_{61}k_{54} \oplus k_{73}k_{61}k_{54} \oplus k_{72}k_{71}k_{61}k_{54} \oplus k_{60}k_{54} \oplus k_{79}k_{78}k_{60}k_{54} \oplus k_{59}k_{54} \oplus \\
& k_{60}k_{59}k_{54} \oplus k_{73}k_{60}k_{59}k_{54} \oplus k_{72}k_{71}k_{60}k_{59}k_{54} \oplus k_{59}k_{58}k_{54} \oplus k_{65}k_{57}k_{54} \oplus \\
& k_{79}k_{78}k_{56}k_{54} \oplus k_{69}k_{56}k_{54} \oplus k_{68}k_{67}k_{56}k_{54} \oplus k_{65}k_{56}k_{54} \oplus k_{57}k_{56}k_{54} \oplus \\
& k_{55}k_{54} \oplus k_{79}k_{78}k_{55}k_{54} \oplus k_{79}k_{78}k_{74}k_{55}k_{54} \oplus k_{79}k_{78}k_{73}k_{72}k_{55}k_{54} \oplus \\
& k_{71}k_{55}k_{54} \oplus k_{70}k_{55}k_{54} \oplus k_{70}k_{69}k_{55}k_{54} \oplus k_{69}k_{68}k_{55}k_{54} \oplus k_{67}k_{55}k_{54} \oplus \\
& k_{66}k_{65}k_{55}k_{54} \oplus k_{79}k_{78}k_{60}k_{55}k_{54} \oplus k_{73}k_{60}k_{55}k_{54} \oplus k_{79}k_{78}k_{73}k_{60}k_{55}k_{54} \oplus \\
& k_{72}k_{71}k_{60}k_{55}k_{54} \oplus k_{79}k_{78}k_{72}k_{71}k_{60}k_{55}k_{54} \oplus k_{70}k_{60}k_{55}k_{54} \oplus \\
& k_{69}k_{68}k_{60}k_{55}k_{54} \oplus k_{65}k_{60}k_{55}k_{54} \oplus k_{65}k_{58}k_{55}k_{54} \oplus k_{57}k_{55}k_{54} \oplus k_{79}k_{53} \oplus \\
& k_{78}k_{53} \oplus k_{79}k_{78}k_{53} \oplus k_{78}k_{77}k_{53} \oplus k_{77}k_{76}k_{53} \oplus k_{74}k_{53} \oplus k_{73}k_{53} \oplus \\
& k_{73}k_{72}k_{53} \oplus k_{71}k_{53} \oplus k_{72}k_{71}k_{53} \oplus k_{70}k_{53} \oplus k_{69}k_{53} \oplus k_{70}k_{69}k_{53} \oplus k_{68}k_{53} \oplus \\
& k_{69}k_{68}k_{53} \oplus k_{67}k_{53} \oplus k_{79}k_{67}k_{53} \oplus k_{78}k_{77}k_{67}k_{53} \oplus k_{68}k_{67}k_{53} \oplus k_{66}k_{53} \oplus \\
& k_{79}k_{66}k_{53} \oplus k_{78}k_{77}k_{66}k_{53} \oplus k_{79}k_{65}k_{53} \oplus k_{78}k_{77}k_{65}k_{53} \oplus k_{64}k_{53} \oplus \\
& k_{79}k_{64}k_{63}k_{53} \oplus k_{78}k_{77}k_{64}k_{63}k_{53} \oplus k_{66}k_{64}k_{63}k_{53} \oplus k_{79}k_{66}k_{64}k_{63}k_{53} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{78}k_{77}k_{66}k_{64}k_{63}k_{53} \oplus k_{65}k_{64}k_{63}k_{53} \oplus k_{79}k_{65}k_{64}k_{63}k_{53} \oplus \\
& k_{78}k_{77}k_{65}k_{64}k_{63}k_{53} \oplus k_{62}k_{53} \oplus k_{79}k_{78}k_{62}k_{53} \oplus k_{68}k_{62}k_{53} \oplus k_{64}k_{62}k_{53} \oplus \\
& k_{61}k_{53} \oplus k_{78}k_{61}k_{53} \oplus k_{77}k_{76}k_{61}k_{53} \oplus k_{73}k_{61}k_{53} \oplus k_{72}k_{71}k_{61}k_{53} \oplus \\
& k_{73}k_{60}k_{53} \oplus k_{72}k_{71}k_{60}k_{53} \oplus k_{69}k_{60}k_{53} \oplus k_{68}k_{67}k_{60}k_{53} \oplus k_{61}k_{60}k_{53} \oplus \\
& k_{79}k_{78}k_{61}k_{60}k_{53} \oplus k_{68}k_{61}k_{60}k_{53} \oplus k_{64}k_{61}k_{60}k_{53} \oplus k_{59}k_{53} \oplus k_{60}k_{59}k_{53} \oplus \\
& k_{78}k_{60}k_{59}k_{53} \oplus k_{77}k_{76}k_{60}k_{59}k_{53} \oplus k_{73}k_{60}k_{59}k_{53} \oplus k_{72}k_{71}k_{60}k_{59}k_{53} \oplus \\
& k_{73}k_{59}k_{58}k_{53} \oplus k_{72}k_{71}k_{59}k_{58}k_{53} \oplus k_{57}k_{53} \oplus k_{56}k_{53} \oplus k_{74}k_{56}k_{53} \oplus \\
& k_{76}k_{72}k_{56}k_{53} \oplus k_{75}k_{74}k_{72}k_{56}k_{53} \oplus k_{73}k_{72}k_{56}k_{53} \oplus k_{76}k_{71}k_{70}k_{56}k_{53} \oplus \\
& k_{75}k_{74}k_{71}k_{70}k_{56}k_{53} \oplus k_{60}k_{56}k_{53} \oplus k_{73}k_{60}k_{56}k_{53} \oplus k_{72}k_{71}k_{60}k_{56}k_{53} \oplus \\
& k_{55}k_{53} \oplus k_{56}k_{55}k_{53} \oplus k_{54}k_{53} \oplus k_{60}k_{54}k_{53} \oplus k_{70}k_{60}k_{54}k_{53} \oplus k_{69}k_{60}k_{54}k_{53} \oplus \\
& k_{69}k_{68}k_{60}k_{54}k_{53} \oplus k_{68}k_{67}k_{60}k_{54}k_{53} \oplus k_{60}k_{58}k_{54}k_{53} \oplus k_{56}k_{54}k_{53} \oplus \\
& k_{60}k_{56}k_{54}k_{53} \oplus k_{60}k_{57}k_{56}k_{54}k_{53} \oplus k_{55}k_{54}k_{53} \oplus k_{74}k_{55}k_{54}k_{53} \oplus \\
& k_{73}k_{72}k_{55}k_{54}k_{53} \oplus k_{73}k_{60}k_{55}k_{54}k_{53} \oplus k_{72}k_{71}k_{60}k_{55}k_{54}k_{53} \oplus \\
& k_{60}k_{56}k_{55}k_{54}k_{53} \oplus k_{52} \oplus k_{79}k_{52} \oplus k_{79}k_{78}k_{52} \oplus k_{78}k_{77}k_{52} \oplus k_{79}k_{78}k_{77}k_{52} \oplus \\
& k_{73}k_{52} \oplus k_{72}k_{71}k_{52} \oplus k_{79}k_{68}k_{52} \oplus k_{78}k_{77}k_{68}k_{52} \oplus k_{67}k_{52} \oplus k_{79}k_{78}k_{67}k_{52} \oplus \\
& k_{68}k_{67}k_{52} \oplus k_{79}k_{78}k_{66}k_{52} \oplus k_{68}k_{66}k_{52} \oplus k_{65}k_{52} \oplus k_{79}k_{78}k_{65}k_{52} \oplus \\
& k_{68}k_{65}k_{52} \oplus k_{64}k_{52} \oplus k_{65}k_{64}k_{52} \oplus k_{64}k_{63}k_{52} \oplus k_{79}k_{78}k_{64}k_{63}k_{52} \oplus \\
& k_{68}k_{64}k_{63}k_{52} \oplus k_{66}k_{64}k_{63}k_{52} \oplus k_{79}k_{78}k_{66}k_{64}k_{63}k_{52} \oplus k_{68}k_{66}k_{64}k_{63}k_{52} \oplus \\
& k_{65}k_{64}k_{63}k_{52} \oplus k_{79}k_{78}k_{65}k_{64}k_{63}k_{52} \oplus k_{68}k_{65}k_{64}k_{63}k_{52} \oplus k_{79}k_{78}k_{62}k_{52} \oplus \\
& k_{68}k_{62}k_{52} \oplus k_{64}k_{62}k_{52} \oplus k_{64}k_{61}k_{52} \oplus k_{60}k_{52} \oplus k_{75}k_{60}k_{52} \oplus k_{74}k_{73}k_{60}k_{52} \oplus \\
& k_{64}k_{60}k_{52} \oplus k_{79}k_{78}k_{61}k_{60}k_{52} \oplus k_{68}k_{61}k_{60}k_{52} \oplus k_{64}k_{61}k_{60}k_{52} \oplus k_{64}k_{59}k_{52} \oplus \\
& k_{74}k_{58}k_{52} \oplus k_{73}k_{72}k_{58}k_{52} \oplus k_{64}k_{58}k_{52} \oplus k_{64}k_{61}k_{58}k_{52} \oplus k_{64}k_{60}k_{58}k_{52} \oplus \\
& k_{59}k_{58}k_{52} \oplus k_{64}k_{59}k_{58}k_{52} \oplus k_{74}k_{57}k_{52} \oplus k_{73}k_{72}k_{57}k_{52} \oplus k_{55}k_{52} \oplus k_{54}k_{52} \oplus \\
& k_{79}k_{53}k_{52} \oplus k_{78}k_{77}k_{53}k_{52} \oplus k_{67}k_{53}k_{52} \oplus k_{66}k_{53}k_{52} \oplus k_{65}k_{53}k_{52} \oplus \\
& k_{64}k_{63}k_{53}k_{52} \oplus k_{66}k_{64}k_{63}k_{53}k_{52} \oplus k_{65}k_{64}k_{63}k_{53}k_{52} \oplus k_{62}k_{53}k_{52} \oplus \\
& k_{61}k_{60}k_{53}k_{52} \oplus k_{51} \oplus k_{79}k_{78}k_{51} \oplus k_{76}k_{51} \oplus k_{75}k_{51} \oplus k_{75}k_{74}k_{51} \oplus k_{73}k_{51} \oplus \\
& k_{74}k_{73}k_{51} \oplus k_{72}k_{51} \oplus k_{73}k_{72}k_{51} \oplus k_{71}k_{51} \oplus k_{71}k_{70}k_{51} \oplus k_{73}k_{71}k_{70}k_{51} \oplus \\
& k_{72}k_{71}k_{70}k_{51} \oplus k_{70}k_{69}k_{51} \oplus k_{66}k_{51} \oplus k_{67}k_{64}k_{51} \oplus k_{66}k_{65}k_{64}k_{51} \oplus \\
& k_{79}k_{78}k_{61}k_{51} \oplus k_{76}k_{61}k_{51} \oplus k_{75}k_{74}k_{61}k_{51} \oplus k_{76}k_{73}k_{61}k_{51} \oplus \\
& k_{75}k_{74}k_{73}k_{61}k_{51} \oplus k_{76}k_{72}k_{71}k_{61}k_{51} \oplus k_{75}k_{74}k_{72}k_{71}k_{61}k_{51} \oplus k_{76}k_{60}k_{51} \oplus \\
& k_{75}k_{74}k_{60}k_{51} \oplus k_{73}k_{60}k_{51} \oplus k_{72}k_{71}k_{60}k_{51} \oplus k_{59}k_{51} \oplus k_{79}k_{78}k_{60}k_{59}k_{51} \oplus \\
& k_{76}k_{60}k_{59}k_{51} \oplus k_{75}k_{74}k_{60}k_{59}k_{51} \oplus k_{76}k_{73}k_{60}k_{59}k_{51} \oplus k_{75}k_{74}k_{73}k_{60}k_{59}k_{51} \oplus \\
& k_{76}k_{72}k_{71}k_{60}k_{59}k_{51} \oplus k_{75}k_{74}k_{72}k_{71}k_{60}k_{59}k_{51} \oplus k_{74}k_{58}k_{51} \oplus k_{73}k_{72}k_{58}k_{51} \oplus \\
& k_{61}k_{58}k_{51} \oplus k_{76}k_{59}k_{58}k_{51} \oplus k_{75}k_{74}k_{59}k_{58}k_{51} \oplus k_{73}k_{59}k_{58}k_{51} \oplus \\
& k_{72}k_{71}k_{59}k_{58}k_{51} \oplus k_{61}k_{59}k_{58}k_{51} \oplus k_{60}k_{59}k_{58}k_{51} \oplus k_{56}k_{51} \oplus k_{74}k_{56}k_{51} \oplus \\
& k_{72}k_{56}k_{51} \oplus k_{73}k_{72}k_{56}k_{51} \oplus k_{71}k_{70}k_{56}k_{51} \oplus k_{62}k_{56}k_{51} \oplus k_{61}k_{56}k_{51} \oplus
\end{aligned}$$



$$\begin{aligned}
& k_{73}k_{61}k_{56}k_{51} \oplus k_{72}k_{71}k_{61}k_{56}k_{51} \oplus k_{60}k_{56}k_{51} \oplus k_{73}k_{60}k_{56}k_{51} \oplus \\
& k_{72}k_{71}k_{60}k_{56}k_{51} \oplus k_{73}k_{60}k_{59}k_{56}k_{51} \oplus k_{72}k_{71}k_{60}k_{59}k_{56}k_{51} \oplus k_{59}k_{58}k_{56}k_{51} \oplus \\
& k_{73}k_{59}k_{58}k_{56}k_{51} \oplus k_{72}k_{71}k_{59}k_{58}k_{56}k_{51} \oplus k_{61}k_{59}k_{58}k_{56}k_{51} \oplus \\
& k_{60}k_{59}k_{58}k_{56}k_{51} \oplus k_{55}k_{51} \oplus k_{66}k_{54}k_{51} \oplus k_{53}k_{51} \oplus k_{61}k_{53}k_{51} \oplus \\
& k_{60}k_{59}k_{53}k_{51} \oplus k_{79}k_{78}k_{52}k_{51} \oplus k_{68}k_{52}k_{51} \oplus k_{64}k_{52}k_{51} \oplus k_{79}k_{78}k_{62}k_{52}k_{51} \oplus \\
& k_{68}k_{62}k_{52}k_{51} \oplus k_{64}k_{62}k_{52}k_{51} \oplus k_{79}k_{78}k_{61}k_{60}k_{52}k_{51} \oplus k_{68}k_{61}k_{60}k_{52}k_{51} \oplus \\
& k_{64}k_{61}k_{60}k_{52}k_{51} \oplus k_{53}k_{52}k_{51} \oplus k_{62}k_{53}k_{52}k_{51} \oplus k_{61}k_{60}k_{53}k_{52}k_{51} \oplus k_{78}k_{50} \oplus \\
& k_{77}k_{50} \oplus k_{76}k_{50} \oplus k_{77}k_{76}k_{50} \oplus k_{76}k_{75}k_{50} \oplus k_{74}k_{50} \oplus k_{76}k_{74}k_{50} \oplus k_{73}k_{50} \oplus \\
& k_{76}k_{73}k_{50} \oplus k_{75}k_{74}k_{73}k_{50} \oplus k_{76}k_{72}k_{50} \oplus k_{75}k_{74}k_{72}k_{50} \oplus k_{73}k_{72}k_{50} \oplus \\
& k_{72}k_{71}k_{50} \oplus k_{76}k_{71}k_{70}k_{50} \oplus k_{75}k_{74}k_{71}k_{70}k_{50} \oplus k_{76}k_{73}k_{71}k_{70}k_{50} \oplus \\
& k_{75}k_{74}k_{73}k_{71}k_{70}k_{50} \oplus k_{76}k_{72}k_{71}k_{70}k_{50} \oplus k_{75}k_{74}k_{72}k_{71}k_{70}k_{50} \oplus k_{69}k_{50} \oplus \\
& k_{67}k_{50} \oplus k_{68}k_{67}k_{50} \oplus k_{66}k_{50} \oplus k_{66}k_{65}k_{50} \oplus k_{67}k_{64}k_{50} \oplus k_{66}k_{65}k_{64}k_{50} \oplus \\
& k_{63}k_{50} \oplus k_{76}k_{62}k_{50} \oplus k_{75}k_{74}k_{62}k_{50} \oplus k_{61}k_{50} \oplus k_{73}k_{61}k_{50} \oplus k_{72}k_{71}k_{61}k_{50} \oplus \\
& k_{62}k_{61}k_{50} \oplus k_{60}k_{50} \oplus k_{78}k_{60}k_{50} \oplus k_{76}k_{60}k_{50} \oplus k_{77}k_{76}k_{60}k_{50} \oplus k_{75}k_{60}k_{50} \oplus \\
& k_{75}k_{74}k_{60}k_{50} \oplus k_{74}k_{73}k_{60}k_{50} \oplus k_{66}k_{60}k_{50} \oplus k_{64}k_{60}k_{50} \oplus k_{65}k_{64}k_{60}k_{50} \oplus \\
& k_{62}k_{60}k_{50} \oplus k_{76}k_{61}k_{60}k_{50} \oplus k_{75}k_{61}k_{60}k_{50} \oplus k_{75}k_{74}k_{61}k_{60}k_{50} \oplus \\
& k_{74}k_{73}k_{61}k_{60}k_{50} \oplus k_{76}k_{59}k_{50} \oplus k_{75}k_{74}k_{59}k_{50} \oplus k_{60}k_{59}k_{50} \oplus k_{75}k_{60}k_{59}k_{50} \oplus \\
& k_{73}k_{60}k_{59}k_{50} \oplus k_{74}k_{73}k_{60}k_{59}k_{50} \oplus k_{72}k_{71}k_{60}k_{59}k_{50} \oplus k_{58}k_{50} \oplus k_{64}k_{58}k_{50} \oplus \\
& k_{76}k_{60}k_{58}k_{50} \oplus k_{75}k_{60}k_{58}k_{50} \oplus k_{75}k_{74}k_{60}k_{58}k_{50} \oplus k_{74}k_{73}k_{60}k_{58}k_{50} \oplus \\
& k_{76}k_{57}k_{50} \oplus k_{75}k_{74}k_{57}k_{50} \oplus k_{64}k_{57}k_{50} \oplus k_{76}k_{58}k_{57}k_{50} \oplus k_{75}k_{74}k_{58}k_{57}k_{50} \oplus \\
& k_{56}k_{50} \oplus k_{76}k_{56}k_{50} \oplus k_{74}k_{56}k_{50} \oplus k_{75}k_{74}k_{56}k_{50} \oplus k_{72}k_{56}k_{50} \oplus \\
& k_{72}k_{71}k_{56}k_{50} \oplus k_{71}k_{70}k_{56}k_{50} \oplus k_{73}k_{71}k_{70}k_{56}k_{50} \oplus k_{72}k_{71}k_{70}k_{56}k_{50} \oplus \\
& k_{59}k_{56}k_{50} \oplus k_{58}k_{57}k_{56}k_{50} \oplus k_{76}k_{55}k_{50} \oplus k_{75}k_{74}k_{55}k_{50} \oplus k_{56}k_{55}k_{50} \oplus \\
& k_{66}k_{54}k_{50} \oplus k_{51}k_{50} \oplus k_{79}k_{51}k_{50} \oplus k_{79}k_{78}k_{51}k_{50} \oplus k_{78}k_{77}k_{51}k_{50} \oplus \\
& k_{79}k_{78}k_{77}k_{51}k_{50} \oplus k_{79}k_{68}k_{51}k_{50} \oplus k_{78}k_{77}k_{68}k_{51}k_{50} \oplus k_{66}k_{51}k_{50} \oplus \\
& k_{64}k_{51}k_{50} \oplus k_{65}k_{64}k_{51}k_{50} \oplus k_{79}k_{78}k_{62}k_{51}k_{50} \oplus k_{68}k_{62}k_{51}k_{50} \oplus \\
& k_{64}k_{62}k_{51}k_{50} \oplus k_{60}k_{51}k_{50} \oplus k_{79}k_{78}k_{61}k_{60}k_{51}k_{50} \oplus k_{68}k_{61}k_{60}k_{51}k_{50} \oplus \\
& k_{64}k_{61}k_{60}k_{51}k_{50} \oplus k_{57}k_{51}k_{50} \oplus k_{54}k_{51}k_{50} \oplus k_{79}k_{53}k_{51}k_{50} \oplus \\
& k_{78}k_{77}k_{53}k_{51}k_{50} \oplus k_{62}k_{53}k_{51}k_{50} \oplus k_{61}k_{60}k_{53}k_{51}k_{50} \oplus k_{52}k_{51}k_{50} \oplus \\
& k_{79}k_{78}k_{52}k_{51}k_{50} \oplus k_{68}k_{52}k_{51}k_{50} \oplus k_{53}k_{52}k_{51}k_{50} \oplus k_{77}k_{49} \oplus k_{79}k_{78}k_{76}k_{49} \oplus \\
& k_{79}k_{78}k_{77}k_{76}k_{49} \oplus k_{76}k_{75}k_{49} \oplus k_{74}k_{49} \oplus k_{78}k_{74}k_{49} \oplus k_{77}k_{74}k_{49} \oplus \\
& k_{76}k_{74}k_{49} \oplus k_{77}k_{76}k_{74}k_{49} \oplus k_{75}k_{74}k_{49} \oplus k_{79}k_{78}k_{75}k_{74}k_{49} \oplus k_{76}k_{75}k_{74}k_{49} \oplus \\
& k_{78}k_{73}k_{49} \oplus k_{77}k_{73}k_{49} \oplus k_{76}k_{73}k_{49} \oplus k_{77}k_{76}k_{73}k_{49} \oplus k_{76}k_{75}k_{73}k_{49} \oplus \\
& k_{75}k_{74}k_{73}k_{49} \oplus k_{77}k_{72}k_{49} \oplus k_{76}k_{72}k_{49} \oplus k_{76}k_{75}k_{72}k_{49} \oplus k_{75}k_{74}k_{72}k_{49} \oplus \\
& k_{78}k_{73}k_{72}k_{49} \oplus k_{76}k_{73}k_{72}k_{49} \oplus k_{77}k_{76}k_{73}k_{72}k_{49} \oplus k_{75}k_{74}k_{73}k_{72}k_{49} \oplus \\
& k_{71}k_{49} \oplus k_{78}k_{71}k_{49} \oplus k_{79}k_{78}k_{71}k_{49} \oplus k_{77}k_{76}k_{71}k_{49} \oplus k_{78}k_{72}k_{71}k_{49} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{76}k_{72}k_{71}k_{49} \oplus k_{77}k_{76}k_{72}k_{71}k_{49} \oplus k_{75}k_{74}k_{72}k_{71}k_{49} \oplus k_{71}k_{70}k_{49} \oplus \\
& k_{77}k_{71}k_{70}k_{49} \oplus k_{76}k_{71}k_{70}k_{49} \oplus k_{76}k_{75}k_{71}k_{70}k_{49} \oplus k_{75}k_{74}k_{71}k_{70}k_{49} \oplus \\
& k_{73}k_{71}k_{70}k_{49} \oplus k_{77}k_{73}k_{71}k_{70}k_{49} \oplus k_{76}k_{75}k_{73}k_{71}k_{70}k_{49} \oplus k_{72}k_{71}k_{70}k_{49} \oplus \\
& k_{77}k_{72}k_{71}k_{70}k_{49} \oplus k_{76}k_{75}k_{72}k_{71}k_{70}k_{49} \oplus k_{72}k_{69}k_{49} \oplus k_{70}k_{69}k_{49} \oplus \\
& k_{78}k_{70}k_{69}k_{49} \oplus k_{79}k_{78}k_{70}k_{69}k_{49} \oplus k_{77}k_{76}k_{70}k_{69}k_{49} \oplus k_{72}k_{70}k_{69}k_{49} \oplus \\
& k_{68}k_{49} \oplus k_{72}k_{68}k_{49} \oplus k_{71}k_{70}k_{68}k_{49} \oplus k_{67}k_{49} \oplus k_{72}k_{68}k_{67}k_{49} \oplus \\
& k_{71}k_{70}k_{68}k_{67}k_{49} \oplus k_{66}k_{65}k_{49} \oplus k_{64}k_{49} \oplus k_{79}k_{78}k_{64}k_{49} \oplus k_{71}k_{64}k_{49} \oplus \\
& k_{70}k_{69}k_{64}k_{49} \oplus k_{67}k_{64}k_{49} \oplus k_{65}k_{64}k_{49} \oplus k_{66}k_{65}k_{64}k_{49} \oplus k_{62}k_{49} \oplus \\
& k_{77}k_{62}k_{49} \oplus k_{76}k_{75}k_{62}k_{49} \oplus k_{61}k_{49} \oplus k_{79}k_{78}k_{77}k_{76}k_{61}k_{49} \oplus k_{75}k_{61}k_{49} \oplus \\
& k_{78}k_{73}k_{61}k_{49} \oplus k_{77}k_{76}k_{73}k_{61}k_{49} \oplus k_{75}k_{73}k_{61}k_{49} \oplus k_{78}k_{72}k_{71}k_{61}k_{49} \oplus \\
& k_{77}k_{76}k_{72}k_{71}k_{61}k_{49} \oplus k_{75}k_{72}k_{71}k_{61}k_{49} \oplus k_{74}k_{73}k_{72}k_{71}k_{61}k_{49} \oplus k_{78}k_{60}k_{49} \oplus \\
& k_{77}k_{60}k_{49} \oplus k_{77}k_{76}k_{60}k_{49} \oplus k_{76}k_{75}k_{60}k_{49} \oplus k_{64}k_{60}k_{49} \oplus k_{61}k_{60}k_{49} \oplus \\
& k_{77}k_{61}k_{60}k_{49} \oplus k_{76}k_{75}k_{61}k_{60}k_{49} \oplus k_{78}k_{59}k_{49} \oplus k_{77}k_{59}k_{49} \oplus k_{77}k_{76}k_{59}k_{49} \oplus \\
& k_{76}k_{75}k_{59}k_{49} \oplus k_{71}k_{59}k_{49} \oplus k_{70}k_{69}k_{59}k_{49} \oplus k_{64}k_{59}k_{49} \oplus k_{60}k_{59}k_{49} \oplus \\
& k_{79}k_{78}k_{77}k_{76}k_{60}k_{59}k_{49} \oplus k_{75}k_{60}k_{59}k_{49} \oplus k_{78}k_{73}k_{60}k_{59}k_{49} \oplus \\
& k_{77}k_{76}k_{73}k_{60}k_{59}k_{49} \oplus k_{75}k_{73}k_{60}k_{59}k_{49} \oplus k_{78}k_{72}k_{71}k_{60}k_{59}k_{49} \oplus \\
& k_{77}k_{76}k_{72}k_{71}k_{60}k_{59}k_{49} \oplus k_{75}k_{72}k_{71}k_{60}k_{59}k_{49} \oplus k_{74}k_{73}k_{72}k_{71}k_{60}k_{59}k_{49} \oplus \\
& k_{58}k_{49} \oplus k_{78}k_{58}k_{49} \oplus k_{77}k_{76}k_{58}k_{49} \oplus k_{72}k_{58}k_{49} \oplus k_{71}k_{58}k_{49} \oplus \\
& k_{71}k_{70}k_{58}k_{49} \oplus k_{70}k_{69}k_{58}k_{49} \oplus k_{62}k_{58}k_{49} \oplus k_{77}k_{60}k_{58}k_{49} \oplus k_{75}k_{60}k_{58}k_{49} \oplus \\
& k_{76}k_{75}k_{60}k_{58}k_{49} \oplus k_{74}k_{73}k_{60}k_{58}k_{49} \oplus k_{59}k_{58}k_{49} \oplus k_{78}k_{59}k_{58}k_{49} \oplus \\
& k_{77}k_{76}k_{59}k_{58}k_{49} \oplus k_{57}k_{49} \oplus k_{78}k_{57}k_{49} \oplus k_{77}k_{57}k_{49} \oplus k_{77}k_{76}k_{57}k_{49} \oplus \\
& k_{76}k_{75}k_{57}k_{49} \oplus k_{74}k_{57}k_{49} \oplus k_{73}k_{57}k_{49} \oplus k_{73}k_{72}k_{57}k_{49} \oplus k_{71}k_{57}k_{49} \oplus \\
& k_{72}k_{71}k_{57}k_{49} \oplus k_{70}k_{69}k_{57}k_{49} \oplus k_{64}k_{57}k_{49} \oplus k_{61}k_{57}k_{49} \oplus k_{60}k_{57}k_{49} \oplus \\
& k_{60}k_{59}k_{57}k_{49} \oplus k_{58}k_{57}k_{49} \oplus k_{78}k_{58}k_{57}k_{49} \oplus k_{77}k_{58}k_{57}k_{49} \oplus \\
& k_{77}k_{76}k_{58}k_{57}k_{49} \oplus k_{76}k_{75}k_{58}k_{57}k_{49} \oplus k_{71}k_{58}k_{57}k_{49} \oplus k_{70}k_{69}k_{58}k_{57}k_{49} \oplus \\
& k_{64}k_{58}k_{57}k_{49} \oplus k_{59}k_{58}k_{57}k_{49} \oplus k_{77}k_{56}k_{49} \oplus k_{75}k_{56}k_{49} \oplus k_{76}k_{75}k_{56}k_{49} \oplus \\
& k_{73}k_{56}k_{49} \oplus k_{75}k_{73}k_{56}k_{49} \oplus k_{72}k_{56}k_{49} \oplus k_{75}k_{72}k_{56}k_{49} \oplus k_{74}k_{73}k_{72}k_{56}k_{49} \oplus \\
& k_{72}k_{71}k_{56}k_{49} \oplus k_{75}k_{72}k_{71}k_{56}k_{49} \oplus k_{74}k_{73}k_{72}k_{71}k_{56}k_{49} \oplus k_{71}k_{70}k_{56}k_{49} \oplus \\
& k_{75}k_{71}k_{70}k_{56}k_{49} \oplus k_{74}k_{73}k_{71}k_{70}k_{56}k_{49} \oplus k_{59}k_{56}k_{49} \oplus k_{57}k_{56}k_{49} \oplus \\
& k_{58}k_{57}k_{56}k_{49} \oplus k_{77}k_{55}k_{49} \oplus k_{76}k_{75}k_{55}k_{49} \oplus k_{72}k_{55}k_{49} \oplus k_{71}k_{70}k_{55}k_{49} \oplus \\
& k_{72}k_{56}k_{55}k_{49} \oplus k_{71}k_{70}k_{56}k_{55}k_{49} \oplus k_{54}k_{49} \oplus k_{66}k_{54}k_{49} \oplus k_{53}k_{49} \oplus \\
& k_{78}k_{53}k_{49} \oplus k_{76}k_{53}k_{49} \oplus k_{77}k_{76}k_{53}k_{49} \oplus k_{75}k_{74}k_{53}k_{49} \oplus k_{71}k_{53}k_{49} \oplus \\
& k_{70}k_{69}k_{53}k_{49} \oplus k_{64}k_{53}k_{49} \oplus k_{61}k_{53}k_{49} \oplus k_{78}k_{61}k_{53}k_{49} \oplus k_{77}k_{76}k_{61}k_{53}k_{49} \oplus \\
& k_{60}k_{59}k_{53}k_{49} \oplus k_{78}k_{60}k_{59}k_{53}k_{49} \oplus k_{77}k_{76}k_{60}k_{59}k_{53}k_{49} \oplus k_{51}k_{49} \oplus \\
& k_{79}k_{78}k_{51}k_{49} \oplus k_{74}k_{51}k_{49} \oplus k_{73}k_{51}k_{49} \oplus k_{73}k_{72}k_{51}k_{49} \oplus k_{71}k_{51}k_{49} \oplus \\
& k_{72}k_{71}k_{51}k_{49} \oplus k_{70}k_{69}k_{51}k_{49} \oplus k_{79}k_{78}k_{61}k_{51}k_{49} \oplus k_{73}k_{61}k_{51}k_{49} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{72}k_{71}k_{61}k_{51}k_{49} \oplus k_{60}k_{51}k_{49} \oplus k_{59}k_{51}k_{49} \oplus k_{79}k_{78}k_{60}k_{59}k_{51}k_{49} \oplus \\
& k_{73}k_{60}k_{59}k_{51}k_{49} \oplus k_{72}k_{71}k_{60}k_{59}k_{51}k_{49} \oplus k_{58}k_{51}k_{49} \oplus k_{59}k_{58}k_{51}k_{49} \oplus \\
& k_{57}k_{51}k_{49} \oplus k_{58}k_{57}k_{51}k_{49} \oplus k_{53}k_{51}k_{49} \oplus k_{61}k_{53}k_{51}k_{49} \oplus k_{60}k_{59}k_{53}k_{51}k_{49} \oplus \\
& k_{50}k_{49} \oplus k_{77}k_{50}k_{49} \oplus k_{76}k_{50}k_{49} \oplus k_{76}k_{75}k_{50}k_{49} \oplus k_{75}k_{74}k_{50}k_{49} \oplus \\
& k_{73}k_{72}k_{50}k_{49} \oplus k_{72}k_{71}k_{50}k_{49} \oplus k_{73}k_{71}k_{70}k_{50}k_{49} \oplus k_{72}k_{71}k_{70}k_{50}k_{49} \oplus \\
& k_{67}k_{50}k_{49} \oplus k_{66}k_{50}k_{49} \oplus k_{66}k_{65}k_{50}k_{49} \oplus k_{67}k_{64}k_{50}k_{49} \oplus k_{66}k_{65}k_{64}k_{50}k_{49} \oplus \\
& k_{60}k_{50}k_{49} \oplus k_{61}k_{60}k_{50}k_{49} \oplus k_{59}k_{50}k_{49} \oplus k_{60}k_{58}k_{50}k_{49} \oplus k_{58}k_{57}k_{50}k_{49} \oplus \\
& k_{56}k_{50}k_{49} \oplus k_{55}k_{50}k_{49} \oplus k_{66}k_{54}k_{50}k_{49} \oplus k_{52}k_{50}k_{49} \oplus k_{51}k_{50}k_{49} \oplus k_{78}k_{48} \oplus \\
& k_{79}k_{78}k_{48} \oplus k_{76}k_{48} \oplus k_{77}k_{76}k_{48} \oplus k_{74}k_{48} \oplus k_{79}k_{78}k_{74}k_{48} \oplus k_{75}k_{74}k_{48} \oplus \\
& k_{73}k_{72}k_{48} \oplus k_{79}k_{78}k_{73}k_{72}k_{48} \oplus k_{74}k_{71}k_{48} \oplus k_{73}k_{72}k_{71}k_{48} \oplus k_{74}k_{70}k_{69}k_{48} \oplus \\
& k_{73}k_{72}k_{70}k_{69}k_{48} \oplus k_{72}k_{68}k_{48} \oplus k_{71}k_{70}k_{68}k_{48} \oplus k_{67}k_{48} \oplus k_{74}k_{67}k_{48} \oplus \\
& k_{73}k_{72}k_{67}k_{48} \oplus k_{74}k_{66}k_{48} \oplus k_{73}k_{72}k_{66}k_{48} \oplus k_{66}k_{65}k_{48} \oplus k_{74}k_{66}k_{65}k_{48} \oplus \\
& k_{73}k_{72}k_{66}k_{65}k_{48} \oplus k_{74}k_{64}k_{48} \oplus k_{73}k_{64}k_{48} \oplus k_{73}k_{71}k_{70}k_{64}k_{48} \oplus \\
& k_{72}k_{71}k_{70}k_{64}k_{48} \oplus k_{74}k_{65}k_{64}k_{48} \oplus k_{73}k_{72}k_{65}k_{64}k_{48} \oplus k_{62}k_{48} \oplus k_{74}k_{62}k_{48} \oplus \\
& k_{73}k_{72}k_{62}k_{48} \oplus k_{61}k_{48} \oplus k_{76}k_{61}k_{48} \oplus k_{75}k_{74}k_{61}k_{48} \oplus k_{76}k_{73}k_{61}k_{48} \oplus \\
& k_{75}k_{74}k_{73}k_{61}k_{48} \oplus k_{76}k_{72}k_{71}k_{61}k_{48} \oplus k_{75}k_{74}k_{72}k_{71}k_{61}k_{48} \oplus k_{67}k_{61}k_{48} \oplus \\
& k_{66}k_{65}k_{61}k_{48} \oplus k_{64}k_{61}k_{48} \oplus k_{62}k_{61}k_{48} \oplus k_{74}k_{62}k_{61}k_{48} \oplus k_{73}k_{72}k_{62}k_{61}k_{48} \oplus \\
& k_{60}k_{48} \oplus k_{79}k_{60}k_{48} \oplus k_{78}k_{77}k_{60}k_{48} \oplus k_{74}k_{60}k_{48} \oplus k_{73}k_{60}k_{48} \oplus k_{72}k_{60}k_{48} \oplus \\
& k_{73}k_{72}k_{60}k_{48} \oplus k_{72}k_{71}k_{60}k_{48} \oplus k_{71}k_{70}k_{60}k_{48} \oplus k_{69}k_{60}k_{48} \oplus k_{68}k_{67}k_{60}k_{48} \oplus \\
& k_{66}k_{60}k_{48} \oplus k_{64}k_{60}k_{48} \oplus k_{61}k_{60}k_{48} \oplus k_{74}k_{59}k_{48} \oplus k_{73}k_{72}k_{59}k_{48} \oplus \\
& k_{76}k_{60}k_{59}k_{48} \oplus k_{75}k_{74}k_{60}k_{59}k_{48} \oplus k_{76}k_{73}k_{60}k_{59}k_{48} \oplus k_{75}k_{74}k_{73}k_{60}k_{59}k_{48} \oplus \\
& k_{76}k_{72}k_{71}k_{60}k_{59}k_{48} \oplus k_{75}k_{74}k_{72}k_{71}k_{60}k_{59}k_{48} \oplus k_{67}k_{60}k_{59}k_{48} \oplus \\
& k_{66}k_{65}k_{60}k_{59}k_{48} \oplus k_{62}k_{60}k_{59}k_{48} \oplus k_{74}k_{62}k_{60}k_{59}k_{48} \oplus k_{73}k_{72}k_{62}k_{60}k_{59}k_{48} \oplus \\
& k_{74}k_{58}k_{48} \oplus k_{73}k_{72}k_{58}k_{48} \oplus k_{64}k_{58}k_{48} \oplus k_{64}k_{61}k_{58}k_{48} \oplus k_{60}k_{58}k_{48} \oplus \\
& k_{76}k_{60}k_{58}k_{48} \oplus k_{75}k_{74}k_{60}k_{58}k_{48} \oplus k_{72}k_{60}k_{58}k_{48} \oplus k_{71}k_{70}k_{60}k_{58}k_{48} \oplus \\
& k_{64}k_{60}k_{58}k_{48} \oplus k_{59}k_{58}k_{48} \oplus k_{74}k_{59}k_{58}k_{48} \oplus k_{73}k_{59}k_{58}k_{48} \oplus k_{72}k_{59}k_{58}k_{48} \oplus \\
& k_{73}k_{72}k_{59}k_{58}k_{48} \oplus k_{72}k_{71}k_{59}k_{58}k_{48} \oplus k_{71}k_{70}k_{59}k_{58}k_{48} \oplus k_{64}k_{59}k_{58}k_{48} \oplus \\
& k_{57}k_{48} \oplus k_{74}k_{57}k_{48} \oplus k_{72}k_{57}k_{48} \oplus k_{73}k_{72}k_{57}k_{48} \oplus k_{71}k_{70}k_{57}k_{48} \oplus \\
& k_{61}k_{57}k_{48} \oplus k_{60}k_{59}k_{57}k_{48} \oplus k_{74}k_{58}k_{57}k_{48} \oplus k_{72}k_{58}k_{57}k_{48} \oplus \\
& k_{73}k_{72}k_{58}k_{57}k_{48} \oplus k_{71}k_{70}k_{58}k_{57}k_{48} \oplus k_{64}k_{58}k_{57}k_{48} \oplus k_{59}k_{58}k_{57}k_{48} \oplus \\
& k_{56}k_{48} \oplus k_{76}k_{56}k_{48} \oplus k_{74}k_{56}k_{48} \oplus k_{75}k_{74}k_{56}k_{48} \oplus k_{76}k_{73}k_{56}k_{48} \oplus \\
& k_{75}k_{74}k_{73}k_{56}k_{48} \oplus k_{76}k_{72}k_{56}k_{48} \oplus k_{75}k_{74}k_{72}k_{56}k_{48} \oplus k_{73}k_{72}k_{56}k_{48} \oplus \\
& k_{76}k_{72}k_{71}k_{56}k_{48} \oplus k_{75}k_{74}k_{72}k_{71}k_{56}k_{48} \oplus k_{76}k_{71}k_{70}k_{56}k_{48} \oplus \\
& k_{75}k_{74}k_{71}k_{70}k_{56}k_{48} \oplus k_{60}k_{56}k_{48} \oplus k_{57}k_{56}k_{48} \oplus k_{55}k_{48} \oplus k_{60}k_{56}k_{55}k_{48} \oplus \\
& k_{53}k_{48} \oplus k_{74}k_{53}k_{48} \oplus k_{73}k_{72}k_{53}k_{48} \oplus k_{60}k_{52}k_{48} \oplus k_{51}k_{48} \oplus k_{60}k_{50}k_{48} \oplus \\
& k_{61}k_{60}k_{50}k_{48} \oplus k_{60}k_{59}k_{50}k_{48} \oplus k_{60}k_{58}k_{50}k_{48} \oplus k_{77}k_{49}k_{48} \oplus k_{76}k_{49}k_{48} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{76}k_{75}k_{49}k_{48} \oplus k_{74}k_{49}k_{48} \oplus k_{75}k_{74}k_{49}k_{48} \oplus k_{73}k_{72}k_{49}k_{48} \oplus k_{67}k_{49}k_{48} \oplus \\
& k_{66}k_{49}k_{48} \oplus k_{66}k_{65}k_{49}k_{48} \oplus k_{67}k_{64}k_{49}k_{48} \oplus k_{66}k_{65}k_{64}k_{49}k_{48} \oplus k_{62}k_{49}k_{48} \oplus \\
& k_{61}k_{49}k_{48} \oplus k_{73}k_{61}k_{49}k_{48} \oplus k_{72}k_{71}k_{61}k_{49}k_{48} \oplus k_{78}k_{60}k_{49}k_{48} \oplus \\
& k_{77}k_{76}k_{60}k_{49}k_{48} \oplus k_{75}k_{60}k_{49}k_{48} \oplus k_{74}k_{73}k_{60}k_{49}k_{48} \oplus k_{62}k_{60}k_{49}k_{48} \oplus \\
& k_{75}k_{61}k_{60}k_{49}k_{48} \oplus k_{74}k_{73}k_{61}k_{60}k_{49}k_{48} \oplus k_{75}k_{60}k_{59}k_{49}k_{48} \oplus \\
& k_{73}k_{60}k_{59}k_{49}k_{48} \oplus k_{74}k_{73}k_{60}k_{59}k_{49}k_{48} \oplus k_{72}k_{71}k_{60}k_{59}k_{49}k_{48} \oplus \\
& k_{75}k_{60}k_{58}k_{49}k_{48} \oplus k_{74}k_{73}k_{60}k_{58}k_{49}k_{48} \oplus k_{57}k_{49}k_{48} \oplus k_{56}k_{49}k_{48} \oplus \\
& k_{73}k_{56}k_{49}k_{48} \oplus k_{72}k_{56}k_{49}k_{48} \oplus k_{72}k_{71}k_{56}k_{49}k_{48} \oplus k_{71}k_{70}k_{56}k_{49}k_{48} \oplus \\
& k_{66}k_{54}k_{49}k_{48} \oplus k_{60}k_{51}k_{49}k_{48} \oplus k_{50}k_{49}k_{48} \oplus k_{47} \oplus k_{78}k_{47} \oplus k_{79}k_{78}k_{47} \oplus \\
& k_{79}k_{78}k_{76}k_{47} \oplus k_{79}k_{78}k_{77}k_{76}k_{47} \oplus k_{76}k_{75}k_{47} \oplus k_{79}k_{78}k_{75}k_{74}k_{47} \oplus \\
& k_{77}k_{75}k_{74}k_{47} \oplus k_{76}k_{75}k_{74}k_{47} \oplus k_{72}k_{47} \oplus k_{71}k_{47} \oplus k_{71}k_{70}k_{47} \oplus k_{73}k_{69}k_{47} \oplus \\
& k_{72}k_{71}k_{69}k_{47} \oplus k_{70}k_{69}k_{47} \oplus k_{68}k_{47} \oplus k_{72}k_{68}k_{47} \oplus k_{71}k_{70}k_{68}k_{47} \oplus \\
& k_{73}k_{68}k_{67}k_{47} \oplus k_{72}k_{71}k_{68}k_{67}k_{47} \oplus k_{75}k_{66}k_{47} \oplus k_{74}k_{73}k_{66}k_{47} \oplus k_{67}k_{66}k_{47} \oplus \\
& k_{75}k_{65}k_{64}k_{47} \oplus k_{74}k_{73}k_{65}k_{64}k_{47} \oplus k_{63}k_{47} \oplus k_{75}k_{62}k_{47} \oplus k_{74}k_{73}k_{62}k_{47} \oplus \\
& k_{69}k_{62}k_{47} \oplus k_{68}k_{67}k_{62}k_{47} \oplus k_{66}k_{62}k_{47} \oplus k_{65}k_{62}k_{47} \oplus k_{64}k_{63}k_{62}k_{47} \oplus \\
& k_{61}k_{47} \oplus k_{75}k_{61}k_{47} \oplus k_{73}k_{61}k_{47} \oplus k_{74}k_{73}k_{61}k_{47} \oplus k_{72}k_{71}k_{61}k_{47} \oplus \\
& k_{62}k_{61}k_{47} \oplus k_{75}k_{62}k_{61}k_{47} \oplus k_{74}k_{73}k_{62}k_{61}k_{47} \oplus k_{73}k_{60}k_{47} \oplus k_{72}k_{60}k_{47} \oplus \\
& k_{72}k_{71}k_{60}k_{47} \oplus k_{71}k_{70}k_{60}k_{47} \oplus k_{64}k_{60}k_{47} \oplus k_{75}k_{64}k_{60}k_{47} \oplus \\
& k_{74}k_{73}k_{64}k_{60}k_{47} \oplus k_{61}k_{60}k_{47} \oplus k_{62}k_{61}k_{60}k_{47} \oplus k_{64}k_{59}k_{47} \oplus k_{75}k_{64}k_{59}k_{47} \oplus \\
& k_{74}k_{73}k_{64}k_{59}k_{47} \oplus k_{60}k_{59}k_{47} \oplus k_{75}k_{60}k_{59}k_{47} \oplus k_{73}k_{60}k_{59}k_{47} \oplus \\
& k_{74}k_{73}k_{60}k_{59}k_{47} \oplus k_{72}k_{71}k_{60}k_{59}k_{47} \oplus k_{75}k_{62}k_{60}k_{59}k_{47} \oplus \\
& k_{74}k_{73}k_{62}k_{60}k_{59}k_{47} \oplus k_{79}k_{58}k_{47} \oplus k_{78}k_{58}k_{47} \oplus k_{77}k_{58}k_{47} \oplus k_{78}k_{77}k_{58}k_{47} \oplus \\
& k_{76}k_{58}k_{47} \oplus k_{77}k_{76}k_{58}k_{47} \oplus k_{76}k_{74}k_{73}k_{58}k_{47} \oplus k_{75}k_{74}k_{73}k_{58}k_{47} \oplus \\
& k_{72}k_{58}k_{47} \oplus k_{71}k_{70}k_{58}k_{47} \oplus k_{64}k_{58}k_{47} \oplus k_{75}k_{64}k_{58}k_{47} \oplus k_{74}k_{73}k_{64}k_{58}k_{47} \oplus \\
& k_{61}k_{58}k_{47} \oplus k_{72}k_{60}k_{58}k_{47} \oplus k_{71}k_{70}k_{60}k_{58}k_{47} \oplus k_{64}k_{60}k_{58}k_{47} \oplus \\
& k_{75}k_{64}k_{60}k_{58}k_{47} \oplus k_{74}k_{73}k_{64}k_{60}k_{58}k_{47} \oplus k_{73}k_{59}k_{58}k_{47} \oplus k_{72}k_{59}k_{58}k_{47} \oplus \\
& k_{72}k_{71}k_{59}k_{58}k_{47} \oplus k_{71}k_{70}k_{59}k_{58}k_{47} \oplus k_{64}k_{59}k_{58}k_{47} \oplus k_{75}k_{64}k_{59}k_{58}k_{47} \oplus \\
& k_{74}k_{73}k_{64}k_{59}k_{58}k_{47} \oplus k_{61}k_{59}k_{58}k_{47} \oplus k_{60}k_{59}k_{58}k_{47} \oplus k_{79}k_{57}k_{47} \oplus \\
& k_{78}k_{57}k_{47} \oplus k_{78}k_{77}k_{57}k_{47} \oplus k_{76}k_{57}k_{47} \oplus k_{77}k_{76}k_{57}k_{47} \oplus k_{75}k_{57}k_{47} \oplus \\
& k_{75}k_{74}k_{57}k_{47} \oplus k_{73}k_{57}k_{47} \oplus k_{74}k_{73}k_{57}k_{47} \oplus k_{72}k_{57}k_{47} \oplus k_{72}k_{71}k_{57}k_{47} \oplus \\
& k_{71}k_{70}k_{57}k_{47} \oplus k_{62}k_{57}k_{47} \oplus k_{61}k_{57}k_{47} \oplus k_{60}k_{57}k_{47} \oplus k_{60}k_{59}k_{57}k_{47} \oplus \\
& k_{78}k_{58}k_{57}k_{47} \oplus k_{76}k_{58}k_{57}k_{47} \oplus k_{77}k_{76}k_{58}k_{57}k_{47} \oplus k_{75}k_{74}k_{58}k_{57}k_{47} \oplus \\
& k_{72}k_{58}k_{57}k_{47} \oplus k_{71}k_{70}k_{58}k_{57}k_{47} \oplus k_{59}k_{58}k_{57}k_{47} \oplus k_{79}k_{78}k_{56}k_{47} \oplus \\
& k_{77}k_{56}k_{47} \oplus k_{75}k_{56}k_{47} \oplus k_{76}k_{75}k_{56}k_{47} \oplus k_{73}k_{56}k_{47} \oplus k_{74}k_{73}k_{56}k_{47} \oplus \\
& k_{72}k_{71}k_{56}k_{47} \oplus k_{62}k_{56}k_{47} \oplus k_{60}k_{56}k_{47} \oplus k_{59}k_{58}k_{56}k_{47} \oplus k_{57}k_{56}k_{47} \oplus \\
& k_{62}k_{55}k_{47} \oplus k_{61}k_{60}k_{55}k_{47} \oplus k_{56}k_{55}k_{47} \oplus k_{73}k_{56}k_{55}k_{47} \oplus k_{72}k_{71}k_{56}k_{55}k_{47} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{62}k_{56}k_{55}k_{47} \oplus k_{54}k_{47} \oplus k_{66}k_{54}k_{47} \oplus k_{79}k_{78}k_{55}k_{54}k_{47} \oplus k_{78}k_{53}k_{47} \oplus \\
& k_{76}k_{53}k_{47} \oplus k_{77}k_{76}k_{53}k_{47} \oplus k_{75}k_{74}k_{53}k_{47} \oplus k_{56}k_{53}k_{47} \oplus k_{55}k_{54}k_{53}k_{47} \oplus \\
& k_{58}k_{52}k_{47} \oplus k_{57}k_{52}k_{47} \oplus k_{79}k_{78}k_{51}k_{47} \oplus k_{58}k_{51}k_{47} \oplus k_{57}k_{51}k_{47} \oplus \\
& k_{58}k_{57}k_{51}k_{47} \oplus k_{53}k_{51}k_{47} \oplus k_{50}k_{47} \oplus k_{76}k_{50}k_{47} \oplus k_{75}k_{74}k_{50}k_{47} \oplus \\
& k_{58}k_{50}k_{47} \oplus k_{56}k_{50}k_{47} \oplus k_{49}k_{47} \oplus k_{78}k_{49}k_{47} \oplus k_{79}k_{78}k_{49}k_{47} \oplus k_{77}k_{49}k_{47} \oplus \\
& k_{76}k_{49}k_{47} \oplus k_{77}k_{76}k_{49}k_{47} \oplus k_{76}k_{75}k_{49}k_{47} \oplus k_{75}k_{74}k_{49}k_{47} \oplus k_{58}k_{49}k_{47} \oplus \\
& k_{75}k_{58}k_{49}k_{47} \oplus k_{74}k_{73}k_{58}k_{49}k_{47} \oplus k_{57}k_{49}k_{47} \oplus k_{58}k_{57}k_{49}k_{47} \oplus k_{53}k_{49}k_{47} \oplus \\
& k_{51}k_{49}k_{47} \oplus k_{48}k_{47} \oplus k_{78}k_{48}k_{47} \oplus k_{77}k_{48}k_{47} \oplus k_{76}k_{48}k_{47} \oplus \\
& k_{79}k_{78}k_{76}k_{48}k_{47} \oplus k_{77}k_{76}k_{48}k_{47} \oplus k_{79}k_{78}k_{77}k_{76}k_{48}k_{47} \oplus k_{76}k_{75}k_{48}k_{47} \oplus \\
& k_{78}k_{74}k_{48}k_{47} \oplus k_{76}k_{74}k_{48}k_{47} \oplus k_{77}k_{76}k_{74}k_{48}k_{47} \oplus k_{79}k_{78}k_{75}k_{74}k_{48}k_{47} \oplus \\
& k_{73}k_{48}k_{47} \oplus k_{78}k_{73}k_{48}k_{47} \oplus k_{76}k_{73}k_{48}k_{47} \oplus k_{77}k_{76}k_{73}k_{48}k_{47} \oplus \\
& k_{75}k_{74}k_{73}k_{48}k_{47} \oplus k_{72}k_{48}k_{47} \oplus k_{76}k_{72}k_{48}k_{47} \oplus k_{75}k_{74}k_{72}k_{48}k_{47} \oplus \\
& k_{78}k_{73}k_{72}k_{48}k_{47} \oplus k_{76}k_{73}k_{72}k_{48}k_{47} \oplus k_{77}k_{76}k_{73}k_{72}k_{48}k_{47} \oplus \\
& k_{75}k_{74}k_{73}k_{72}k_{48}k_{47} \oplus k_{78}k_{71}k_{48}k_{47} \oplus k_{79}k_{78}k_{71}k_{48}k_{47} \oplus k_{77}k_{76}k_{71}k_{48}k_{47} \oplus \\
& k_{72}k_{71}k_{48}k_{47} \oplus k_{78}k_{72}k_{71}k_{48}k_{47} \oplus k_{76}k_{72}k_{71}k_{48}k_{47} \oplus k_{77}k_{76}k_{72}k_{71}k_{48}k_{47} \oplus \\
& k_{75}k_{74}k_{72}k_{71}k_{48}k_{47} \oplus k_{71}k_{70}k_{48}k_{47} \oplus k_{76}k_{71}k_{70}k_{48}k_{47} \oplus \\
& k_{75}k_{74}k_{71}k_{70}k_{48}k_{47} \oplus k_{78}k_{70}k_{69}k_{48}k_{47} \oplus k_{79}k_{78}k_{70}k_{69}k_{48}k_{47} \oplus \\
& k_{77}k_{76}k_{70}k_{69}k_{48}k_{47} \oplus k_{72}k_{68}k_{48}k_{47} \oplus k_{71}k_{70}k_{68}k_{48}k_{47} \oplus k_{66}k_{48}k_{47} \oplus \\
& k_{64}k_{48}k_{47} \oplus k_{79}k_{78}k_{64}k_{48}k_{47} \oplus k_{71}k_{64}k_{48}k_{47} \oplus k_{70}k_{69}k_{64}k_{48}k_{47} \oplus \\
& k_{67}k_{64}k_{48}k_{47} \oplus k_{66}k_{65}k_{64}k_{48}k_{47} \oplus k_{61}k_{48}k_{47} \oplus k_{78}k_{61}k_{48}k_{47} \oplus \\
& k_{77}k_{76}k_{61}k_{48}k_{47} \oplus k_{79}k_{78}k_{77}k_{76}k_{61}k_{48}k_{47} \oplus k_{62}k_{61}k_{48}k_{47} \oplus k_{60}k_{48}k_{47} \oplus \\
& k_{64}k_{60}k_{48}k_{47} \oplus k_{78}k_{59}k_{48}k_{47} \oplus k_{77}k_{76}k_{59}k_{48}k_{47} \oplus k_{71}k_{59}k_{48}k_{47} \oplus \\
& k_{70}k_{69}k_{59}k_{48}k_{47} \oplus k_{60}k_{59}k_{48}k_{47} \oplus k_{78}k_{60}k_{59}k_{48}k_{47} \oplus k_{77}k_{76}k_{60}k_{59}k_{48}k_{47} \oplus \\
& k_{79}k_{78}k_{77}k_{76}k_{60}k_{59}k_{48}k_{47} \oplus k_{62}k_{60}k_{59}k_{48}k_{47} \oplus k_{58}k_{48}k_{47} \oplus k_{78}k_{58}k_{48}k_{47} \oplus \\
& k_{76}k_{58}k_{48}k_{47} \oplus k_{77}k_{76}k_{58}k_{48}k_{47} \oplus k_{75}k_{74}k_{58}k_{48}k_{47} \oplus k_{72}k_{58}k_{48}k_{47} \oplus \\
& k_{71}k_{58}k_{48}k_{47} \oplus k_{71}k_{70}k_{58}k_{48}k_{47} \oplus k_{70}k_{69}k_{58}k_{48}k_{47} \oplus k_{64}k_{58}k_{48}k_{47} \oplus \\
& k_{64}k_{60}k_{58}k_{48}k_{47} \oplus k_{59}k_{58}k_{48}k_{47} \oplus k_{64}k_{59}k_{58}k_{48}k_{47} \oplus k_{78}k_{57}k_{48}k_{47} \oplus \\
& k_{77}k_{76}k_{57}k_{48}k_{47} \oplus k_{72}k_{57}k_{48}k_{47} \oplus k_{71}k_{57}k_{48}k_{47} \oplus k_{71}k_{70}k_{57}k_{48}k_{47} \oplus \\
& k_{70}k_{69}k_{57}k_{48}k_{47} \oplus k_{64}k_{57}k_{48}k_{47} \oplus k_{61}k_{57}k_{48}k_{47} \oplus k_{60}k_{57}k_{48}k_{47} \oplus \\
& k_{60}k_{59}k_{57}k_{48}k_{47} \oplus k_{78}k_{58}k_{57}k_{48}k_{47} \oplus k_{77}k_{76}k_{58}k_{57}k_{48}k_{47} \oplus \\
& k_{71}k_{58}k_{57}k_{48}k_{47} \oplus k_{70}k_{69}k_{58}k_{57}k_{48}k_{47} \oplus k_{64}k_{58}k_{57}k_{48}k_{47} \oplus \\
& k_{59}k_{58}k_{57}k_{48}k_{47} \oplus k_{56}k_{48}k_{47} \oplus k_{72}k_{56}k_{48}k_{47} \oplus k_{79}k_{78}k_{72}k_{56}k_{48}k_{47} \oplus \\
& k_{71}k_{70}k_{56}k_{48}k_{47} \oplus k_{79}k_{78}k_{71}k_{70}k_{56}k_{48}k_{47} \oplus k_{59}k_{56}k_{48}k_{47} \oplus \\
& k_{58}k_{57}k_{56}k_{48}k_{47} \oplus k_{72}k_{55}k_{48}k_{47} \oplus k_{71}k_{70}k_{55}k_{48}k_{47} \oplus k_{66}k_{54}k_{48}k_{47} \oplus \\
& k_{53}k_{48}k_{47} \oplus k_{78}k_{53}k_{48}k_{47} \oplus k_{76}k_{53}k_{48}k_{47} \oplus k_{77}k_{76}k_{53}k_{48}k_{47} \oplus \\
& k_{75}k_{74}k_{53}k_{48}k_{47} \oplus k_{71}k_{53}k_{48}k_{47} \oplus k_{70}k_{69}k_{53}k_{48}k_{47} \oplus k_{64}k_{53}k_{48}k_{47} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{61}k_{53}k_{48}k_{47} \oplus k_{78}k_{61}k_{53}k_{48}k_{47} \oplus k_{77}k_{76}k_{61}k_{53}k_{48}k_{47} \oplus k_{60}k_{59}k_{53}k_{48}k_{47} \oplus \\
& k_{78}k_{60}k_{59}k_{53}k_{48}k_{47} \oplus k_{77}k_{76}k_{60}k_{59}k_{53}k_{48}k_{47} \oplus k_{72}k_{56}k_{53}k_{48}k_{47} \oplus \\
& k_{71}k_{70}k_{56}k_{53}k_{48}k_{47} \oplus k_{51}k_{48}k_{47} \oplus k_{79}k_{78}k_{51}k_{48}k_{47} \oplus k_{74}k_{51}k_{48}k_{47} \oplus \\
& k_{73}k_{51}k_{48}k_{47} \oplus k_{73}k_{72}k_{51}k_{48}k_{47} \oplus k_{71}k_{51}k_{48}k_{47} \oplus k_{72}k_{71}k_{51}k_{48}k_{47} \oplus \\
& k_{70}k_{69}k_{51}k_{48}k_{47} \oplus k_{61}k_{51}k_{48}k_{47} \oplus k_{79}k_{78}k_{61}k_{51}k_{48}k_{47} \oplus k_{59}k_{51}k_{48}k_{47} \oplus \\
& k_{60}k_{59}k_{51}k_{48}k_{47} \oplus k_{79}k_{78}k_{60}k_{59}k_{51}k_{48}k_{47} \oplus k_{58}k_{51}k_{48}k_{47} \oplus k_{57}k_{51}k_{48}k_{47} \oplus \\
& k_{58}k_{57}k_{51}k_{48}k_{47} \oplus k_{53}k_{51}k_{48}k_{47} \oplus k_{61}k_{53}k_{51}k_{48}k_{47} \oplus k_{60}k_{59}k_{53}k_{51}k_{48}k_{47} \oplus \\
& k_{50}k_{48}k_{47} \oplus k_{79}k_{78}k_{49}k_{48}k_{47} \oplus k_{74}k_{49}k_{48}k_{47} \oplus k_{73}k_{49}k_{48}k_{47} \oplus \\
& k_{72}k_{49}k_{48}k_{47} \oplus k_{73}k_{72}k_{49}k_{48}k_{47} \oplus k_{72}k_{71}k_{49}k_{48}k_{47} \oplus k_{71}k_{70}k_{49}k_{48}k_{47} \oplus \\
& k_{58}k_{49}k_{48}k_{47} \oplus k_{53}k_{49}k_{48}k_{47} \oplus k_{46} \oplus k_{79}k_{46} \oplus k_{79}k_{78}k_{46} \oplus k_{77}k_{46} \oplus \\
& k_{78}k_{77}k_{46} \oplus k_{77}k_{76}k_{46} \oplus k_{75}k_{46} \oplus k_{74}k_{46} \oplus k_{77}k_{75}k_{74}k_{46} \oplus k_{76}k_{75}k_{74}k_{46} \oplus \\
& k_{73}k_{46} \oplus k_{74}k_{73}k_{46} \oplus k_{72}k_{46} \oplus k_{78}k_{72}k_{46} \oplus k_{76}k_{72}k_{46} \oplus k_{76}k_{75}k_{72}k_{46} \oplus \\
& k_{75}k_{74}k_{72}k_{46} \oplus k_{77}k_{75}k_{74}k_{72}k_{46} \oplus k_{76}k_{75}k_{74}k_{72}k_{46} \oplus k_{73}k_{72}k_{46} \oplus k_{71}k_{46} \oplus \\
& k_{72}k_{71}k_{46} \oplus k_{71}k_{70}k_{46} \oplus k_{78}k_{71}k_{70}k_{46} \oplus k_{76}k_{71}k_{70}k_{46} \oplus k_{76}k_{75}k_{71}k_{70}k_{46} \oplus \\
& k_{75}k_{74}k_{71}k_{70}k_{46} \oplus k_{77}k_{75}k_{74}k_{71}k_{70}k_{46} \oplus k_{76}k_{75}k_{74}k_{71}k_{70}k_{46} \oplus k_{69}k_{46} \oplus \\
& k_{74}k_{69}k_{46} \oplus k_{73}k_{72}k_{69}k_{46} \oplus k_{70}k_{69}k_{46} \oplus k_{68}k_{67}k_{46} \oplus k_{74}k_{68}k_{67}k_{46} \oplus \\
& k_{73}k_{72}k_{68}k_{67}k_{46} \oplus k_{66}k_{46} \oplus k_{79}k_{64}k_{46} \oplus k_{78}k_{77}k_{64}k_{46} \oplus k_{75}k_{72}k_{64}k_{46} \oplus \\
& k_{74}k_{73}k_{72}k_{64}k_{46} \oplus k_{75}k_{71}k_{70}k_{64}k_{46} \oplus k_{74}k_{73}k_{71}k_{70}k_{64}k_{46} \oplus k_{63}k_{46} \oplus \\
& k_{72}k_{63}k_{46} \oplus k_{71}k_{70}k_{63}k_{46} \oplus k_{62}k_{46} \oplus k_{61}k_{46} \oplus k_{79}k_{78}k_{61}k_{46} \oplus k_{77}k_{61}k_{46} \oplus \\
& k_{78}k_{76}k_{61}k_{46} \oplus k_{77}k_{76}k_{61}k_{46} \oplus k_{75}k_{61}k_{46} \oplus k_{74}k_{61}k_{46} \oplus k_{75}k_{74}k_{61}k_{46} \oplus \\
& k_{78}k_{75}k_{74}k_{61}k_{46} \oplus k_{77}k_{76}k_{75}k_{74}k_{61}k_{46} \oplus k_{74}k_{73}k_{61}k_{46} \oplus k_{76}k_{74}k_{73}k_{61}k_{46} \oplus \\
& k_{75}k_{74}k_{73}k_{61}k_{46} \oplus k_{73}k_{72}k_{61}k_{46} \oplus k_{64}k_{61}k_{46} \oplus k_{72}k_{62}k_{61}k_{46} \oplus \\
& k_{71}k_{70}k_{62}k_{61}k_{46} \oplus k_{78}k_{60}k_{46} \oplus k_{79}k_{78}k_{60}k_{46} \oplus k_{77}k_{76}k_{60}k_{46} \oplus k_{74}k_{60}k_{46} \oplus \\
& k_{72}k_{60}k_{46} \oplus k_{73}k_{72}k_{60}k_{46} \oplus k_{71}k_{70}k_{60}k_{46} \oplus k_{64}k_{60}k_{46} \oplus k_{61}k_{60}k_{46} \oplus \\
& k_{64}k_{59}k_{46} \oplus k_{60}k_{59}k_{46} \oplus k_{79}k_{78}k_{60}k_{59}k_{46} \oplus k_{77}k_{60}k_{59}k_{46} \oplus \\
& k_{78}k_{76}k_{60}k_{59}k_{46} \oplus k_{77}k_{76}k_{60}k_{59}k_{46} \oplus k_{75}k_{60}k_{59}k_{46} \oplus k_{74}k_{60}k_{59}k_{46} \oplus \\
& k_{75}k_{74}k_{60}k_{59}k_{46} \oplus k_{78}k_{75}k_{74}k_{60}k_{59}k_{46} \oplus k_{77}k_{76}k_{75}k_{74}k_{60}k_{59}k_{46} \oplus \\
& k_{74}k_{73}k_{60}k_{59}k_{46} \oplus k_{76}k_{74}k_{73}k_{60}k_{59}k_{46} \oplus k_{75}k_{74}k_{73}k_{60}k_{59}k_{46} \oplus \\
& k_{73}k_{72}k_{60}k_{59}k_{46} \oplus k_{64}k_{60}k_{59}k_{46} \oplus k_{62}k_{60}k_{59}k_{46} \oplus k_{61}k_{60}k_{59}k_{46} \oplus \\
& k_{78}k_{58}k_{46} \oplus k_{77}k_{76}k_{58}k_{46} \oplus k_{74}k_{58}k_{46} \oplus k_{73}k_{58}k_{46} \oplus k_{72}k_{58}k_{46} \oplus \\
& k_{73}k_{72}k_{58}k_{46} \oplus k_{72}k_{71}k_{58}k_{46} \oplus k_{71}k_{70}k_{58}k_{46} \oplus k_{64}k_{58}k_{46} \oplus k_{79}k_{64}k_{58}k_{46} \oplus \\
& k_{78}k_{77}k_{64}k_{58}k_{46} \oplus k_{75}k_{64}k_{58}k_{46} \oplus k_{74}k_{73}k_{64}k_{58}k_{46} \oplus k_{61}k_{58}k_{46} \oplus \\
& k_{78}k_{59}k_{58}k_{46} \oplus k_{79}k_{78}k_{59}k_{58}k_{46} \oplus k_{77}k_{76}k_{59}k_{58}k_{46} \oplus k_{74}k_{59}k_{58}k_{46} \oplus \\
& k_{72}k_{59}k_{58}k_{46} \oplus k_{73}k_{72}k_{59}k_{58}k_{46} \oplus k_{71}k_{70}k_{59}k_{58}k_{46} \oplus k_{64}k_{59}k_{58}k_{46} \oplus \\
& k_{61}k_{59}k_{58}k_{46} \oplus k_{60}k_{59}k_{58}k_{46} \oplus k_{57}k_{46} \oplus k_{76}k_{57}k_{46} \oplus k_{74}k_{57}k_{46} \oplus \\
& k_{75}k_{74}k_{57}k_{46} \oplus k_{73}k_{72}k_{57}k_{46} \oplus k_{64}k_{58}k_{57}k_{46} \oplus k_{76}k_{56}k_{46} \oplus k_{76}k_{75}k_{56}k_{46} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{74}k_{56}k_{46} \oplus k_{76}k_{74}k_{73}k_{56}k_{46} \oplus k_{75}k_{74}k_{73}k_{56}k_{46} \oplus k_{72}k_{56}k_{46} \oplus \\
& k_{77}k_{72}k_{56}k_{46} \oplus k_{76}k_{75}k_{72}k_{56}k_{46} \oplus k_{73}k_{72}k_{56}k_{46} \oplus k_{71}k_{70}k_{56}k_{46} \oplus \\
& k_{77}k_{71}k_{70}k_{56}k_{46} \oplus k_{76}k_{75}k_{71}k_{70}k_{56}k_{46} \oplus k_{62}k_{56}k_{46} \oplus k_{61}k_{56}k_{46} \oplus \\
& k_{78}k_{61}k_{56}k_{46} \oplus k_{77}k_{76}k_{61}k_{56}k_{46} \oplus k_{64}k_{61}k_{56}k_{46} \oplus k_{60}k_{56}k_{46} \oplus \\
& k_{78}k_{60}k_{56}k_{46} \oplus k_{79}k_{78}k_{60}k_{56}k_{46} \oplus k_{77}k_{76}k_{60}k_{56}k_{46} \oplus k_{64}k_{60}k_{56}k_{46} \oplus \\
& k_{61}k_{60}k_{56}k_{46} \oplus k_{60}k_{59}k_{56}k_{46} \oplus k_{78}k_{60}k_{59}k_{56}k_{46} \oplus k_{77}k_{76}k_{60}k_{59}k_{56}k_{46} \oplus \\
& k_{64}k_{60}k_{59}k_{56}k_{46} \oplus k_{78}k_{59}k_{58}k_{56}k_{46} \oplus k_{77}k_{76}k_{59}k_{58}k_{56}k_{46} \oplus \\
& k_{64}k_{59}k_{58}k_{56}k_{46} \oplus k_{55}k_{46} \oplus k_{72}k_{55}k_{46} \oplus k_{71}k_{70}k_{55}k_{46} \oplus k_{56}k_{55}k_{46} \oplus \\
& k_{74}k_{56}k_{55}k_{46} \oplus k_{73}k_{72}k_{56}k_{55}k_{46} \oplus k_{54}k_{46} \oplus k_{61}k_{54}k_{46} \oplus k_{60}k_{59}k_{54}k_{46} \oplus \\
& k_{60}k_{55}k_{54}k_{46} \oplus k_{79}k_{78}k_{60}k_{55}k_{54}k_{46} \oplus k_{53}k_{46} \oplus k_{61}k_{53}k_{46} \oplus k_{60}k_{53}k_{46} \oplus \\
& k_{60}k_{59}k_{53}k_{46} \oplus k_{59}k_{58}k_{53}k_{46} \oplus k_{60}k_{56}k_{53}k_{46} \oplus k_{60}k_{55}k_{54}k_{53}k_{46} \oplus k_{52}k_{46} \oplus \\
& k_{64}k_{52}k_{46} \oplus k_{64}k_{58}k_{52}k_{46} \oplus k_{72}k_{51}k_{46} \oplus k_{71}k_{70}k_{51}k_{46} \oplus k_{76}k_{61}k_{51}k_{46} \oplus \\
& k_{75}k_{74}k_{61}k_{51}k_{46} \oplus k_{60}k_{51}k_{46} \oplus k_{76}k_{60}k_{59}k_{51}k_{46} \oplus k_{75}k_{74}k_{60}k_{59}k_{51}k_{46} \oplus \\
& k_{58}k_{51}k_{46} \oplus k_{59}k_{58}k_{51}k_{46} \oplus k_{61}k_{56}k_{51}k_{46} \oplus k_{60}k_{56}k_{51}k_{46} \oplus \\
& k_{60}k_{59}k_{56}k_{51}k_{46} \oplus k_{59}k_{58}k_{56}k_{51}k_{46} \oplus k_{50}k_{46} \oplus k_{76}k_{50}k_{46} \oplus k_{75}k_{74}k_{50}k_{46} \oplus \\
& k_{76}k_{72}k_{50}k_{46} \oplus k_{75}k_{74}k_{72}k_{50}k_{46} \oplus k_{76}k_{71}k_{70}k_{50}k_{46} \oplus k_{75}k_{74}k_{71}k_{70}k_{50}k_{46} \oplus \\
& k_{61}k_{50}k_{46} \oplus k_{60}k_{59}k_{50}k_{46} \oplus k_{72}k_{56}k_{50}k_{46} \oplus k_{71}k_{70}k_{56}k_{50}k_{46} \oplus k_{78}k_{49}k_{46} \oplus \\
& k_{77}k_{49}k_{46} \oplus k_{76}k_{49}k_{46} \oplus k_{77}k_{76}k_{49}k_{46} \oplus k_{76}k_{75}k_{49}k_{46} \oplus k_{75}k_{74}k_{49}k_{46} \oplus \\
& k_{72}k_{49}k_{46} \oplus k_{77}k_{72}k_{49}k_{46} \oplus k_{76}k_{75}k_{72}k_{49}k_{46} \oplus k_{71}k_{70}k_{49}k_{46} \oplus \\
& k_{77}k_{71}k_{70}k_{49}k_{46} \oplus k_{76}k_{75}k_{71}k_{70}k_{49}k_{46} \oplus k_{78}k_{61}k_{49}k_{46} \oplus k_{77}k_{76}k_{61}k_{49}k_{46} \oplus \\
& k_{75}k_{61}k_{49}k_{46} \oplus k_{74}k_{73}k_{61}k_{49}k_{46} \oplus k_{78}k_{60}k_{59}k_{49}k_{46} \oplus k_{77}k_{76}k_{60}k_{59}k_{49}k_{46} \oplus \\
& k_{75}k_{60}k_{59}k_{49}k_{46} \oplus k_{74}k_{73}k_{60}k_{59}k_{49}k_{46} \oplus k_{57}k_{49}k_{46} \oplus k_{56}k_{49}k_{46} \oplus \\
& k_{75}k_{56}k_{49}k_{46} \oplus k_{74}k_{73}k_{56}k_{49}k_{46} \oplus k_{51}k_{49}k_{46} \oplus k_{61}k_{51}k_{49}k_{46} \oplus \\
& k_{60}k_{59}k_{51}k_{49}k_{46} \oplus k_{72}k_{50}k_{49}k_{46} \oplus k_{71}k_{70}k_{50}k_{49}k_{46} \oplus k_{72}k_{64}k_{48}k_{46} \oplus \\
& k_{71}k_{70}k_{64}k_{48}k_{46} \oplus k_{76}k_{61}k_{48}k_{46} \oplus k_{75}k_{74}k_{61}k_{48}k_{46} \oplus k_{60}k_{48}k_{46} \oplus \\
& k_{76}k_{60}k_{59}k_{48}k_{46} \oplus k_{75}k_{74}k_{60}k_{59}k_{48}k_{46} \oplus k_{64}k_{58}k_{48}k_{46} \oplus k_{59}k_{58}k_{48}k_{46} \oplus \\
& k_{76}k_{56}k_{48}k_{46} \oplus k_{75}k_{74}k_{56}k_{48}k_{46} \oplus k_{61}k_{49}k_{48}k_{46} \oplus k_{60}k_{59}k_{49}k_{48}k_{46} \oplus \\
& k_{56}k_{49}k_{48}k_{46} \oplus k_{47}k_{46} \oplus k_{76}k_{47}k_{46} \oplus k_{74}k_{47}k_{46} \oplus k_{79}k_{78}k_{74}k_{47}k_{46} \oplus \\
& k_{75}k_{74}k_{47}k_{46} \oplus k_{73}k_{47}k_{46} \oplus k_{73}k_{72}k_{47}k_{46} \oplus k_{79}k_{78}k_{73}k_{72}k_{47}k_{46} \oplus \\
& k_{71}k_{47}k_{46} \oplus k_{74}k_{71}k_{47}k_{46} \oplus k_{72}k_{71}k_{47}k_{46} \oplus k_{73}k_{72}k_{71}k_{47}k_{46} \oplus \\
& k_{70}k_{69}k_{47}k_{46} \oplus k_{74}k_{70}k_{69}k_{47}k_{46} \oplus k_{73}k_{72}k_{70}k_{69}k_{47}k_{46} \oplus k_{72}k_{68}k_{47}k_{46} \oplus \\
& k_{71}k_{70}k_{68}k_{47}k_{46} \oplus k_{74}k_{67}k_{47}k_{46} \oplus k_{73}k_{72}k_{67}k_{47}k_{46} \oplus k_{66}k_{47}k_{46} \oplus \\
& k_{74}k_{66}k_{65}k_{47}k_{46} \oplus k_{73}k_{72}k_{66}k_{65}k_{47}k_{46} \oplus k_{65}k_{64}k_{47}k_{46} \oplus k_{61}k_{47}k_{46} \oplus \\
& k_{74}k_{61}k_{47}k_{46} \oplus k_{73}k_{61}k_{47}k_{46} \oplus k_{73}k_{72}k_{61}k_{47}k_{46} \oplus k_{72}k_{71}k_{61}k_{47}k_{46} \oplus \\
& k_{67}k_{61}k_{47}k_{46} \oplus k_{66}k_{65}k_{61}k_{47}k_{46} \oplus k_{74}k_{60}k_{47}k_{46} \oplus k_{73}k_{60}k_{47}k_{46} \oplus \\
& k_{72}k_{60}k_{47}k_{46} \oplus k_{73}k_{72}k_{60}k_{47}k_{46} \oplus k_{72}k_{71}k_{60}k_{47}k_{46} \oplus k_{71}k_{70}k_{60}k_{47}k_{46} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{59}k_{47}k_{46} \oplus k_{74}k_{59}k_{47}k_{46} \oplus k_{73}k_{72}k_{59}k_{47}k_{46} \oplus k_{60}k_{59}k_{47}k_{46} \oplus \\
& k_{74}k_{60}k_{59}k_{47}k_{46} \oplus k_{73}k_{60}k_{59}k_{47}k_{46} \oplus k_{73}k_{72}k_{60}k_{59}k_{47}k_{46} \oplus \\
& k_{72}k_{71}k_{60}k_{59}k_{47}k_{46} \oplus k_{67}k_{60}k_{59}k_{47}k_{46} \oplus k_{66}k_{65}k_{60}k_{59}k_{47}k_{46} \oplus \\
& k_{74}k_{58}k_{47}k_{46} \oplus k_{73}k_{72}k_{58}k_{47}k_{46} \oplus k_{72}k_{60}k_{58}k_{47}k_{46} \oplus k_{71}k_{70}k_{60}k_{58}k_{47}k_{46} \oplus \\
& k_{74}k_{59}k_{58}k_{47}k_{46} \oplus k_{73}k_{59}k_{58}k_{47}k_{46} \oplus k_{72}k_{59}k_{58}k_{47}k_{46} \oplus \\
& k_{73}k_{72}k_{59}k_{58}k_{47}k_{46} \oplus k_{72}k_{71}k_{59}k_{58}k_{47}k_{46} \oplus k_{71}k_{70}k_{59}k_{58}k_{47}k_{46} \oplus \\
& k_{57}k_{47}k_{46} \oplus k_{72}k_{57}k_{47}k_{46} \oplus k_{71}k_{70}k_{57}k_{47}k_{46} \oplus k_{58}k_{57}k_{47}k_{46} \oplus \\
& k_{74}k_{58}k_{57}k_{47}k_{46} \oplus k_{72}k_{58}k_{57}k_{47}k_{46} \oplus k_{73}k_{72}k_{58}k_{57}k_{47}k_{46} \oplus \\
& k_{71}k_{70}k_{58}k_{57}k_{47}k_{46} \oplus k_{57}k_{56}k_{47}k_{46} \oplus k_{55}k_{47}k_{46} \oplus k_{74}k_{53}k_{47}k_{46} \oplus \\
& k_{73}k_{72}k_{53}k_{47}k_{46} \oplus k_{78}k_{48}k_{47}k_{46} \oplus k_{76}k_{48}k_{47}k_{46} \oplus k_{77}k_{76}k_{48}k_{47}k_{46} \oplus \\
& k_{75}k_{74}k_{48}k_{47}k_{46} \oplus k_{51}k_{48}k_{47}k_{46} \oplus k_{49}k_{48}k_{47}k_{46} \oplus k_{45} \oplus k_{77}k_{76}k_{45} \oplus \\
& k_{76}k_{75}k_{45} \oplus k_{74}k_{45} \oplus k_{77}k_{75}k_{74}k_{45} \oplus k_{76}k_{75}k_{74}k_{45} \oplus k_{73}k_{45} \oplus k_{78}k_{73}k_{45} \oplus \\
& k_{76}k_{73}k_{45} \oplus k_{76}k_{75}k_{73}k_{45} \oplus k_{75}k_{74}k_{73}k_{45} \oplus k_{77}k_{75}k_{74}k_{73}k_{45} \oplus \\
& k_{76}k_{75}k_{74}k_{73}k_{45} \oplus k_{73}k_{72}k_{45} \oplus k_{76}k_{71}k_{45} \oplus k_{75}k_{74}k_{71}k_{45} \oplus k_{72}k_{71}k_{45} \oplus \\
& k_{78}k_{72}k_{71}k_{45} \oplus k_{76}k_{72}k_{71}k_{45} \oplus k_{76}k_{75}k_{72}k_{71}k_{45} \oplus k_{75}k_{74}k_{72}k_{71}k_{45} \oplus \\
& k_{77}k_{75}k_{74}k_{72}k_{71}k_{45} \oplus k_{76}k_{75}k_{74}k_{72}k_{71}k_{45} \oplus k_{69}k_{45} \oplus k_{76}k_{69}k_{45} \oplus \\
& k_{75}k_{74}k_{69}k_{45} \oplus k_{76}k_{70}k_{69}k_{45} \oplus k_{75}k_{74}k_{70}k_{69}k_{45} \oplus k_{68}k_{45} \oplus k_{67}k_{45} \oplus \\
& k_{68}k_{67}k_{45} \oplus k_{76}k_{68}k_{67}k_{45} \oplus k_{75}k_{74}k_{68}k_{67}k_{45} \oplus k_{65}k_{45} \oplus k_{64}k_{45} \oplus \\
& k_{75}k_{73}k_{64}k_{45} \oplus k_{74}k_{73}k_{64}k_{45} \oplus k_{75}k_{72}k_{71}k_{64}k_{45} \oplus k_{74}k_{73}k_{72}k_{71}k_{64}k_{45} \oplus \\
& k_{63}k_{45} \oplus k_{73}k_{63}k_{45} \oplus k_{72}k_{71}k_{63}k_{45} \oplus k_{64}k_{63}k_{45} \oplus k_{66}k_{64}k_{63}k_{45} \oplus \\
& k_{65}k_{64}k_{63}k_{45} \oplus k_{71}k_{61}k_{45} \oplus k_{70}k_{69}k_{61}k_{45} \oplus k_{62}k_{61}k_{45} \oplus k_{73}k_{62}k_{61}k_{45} \oplus \\
& k_{72}k_{71}k_{62}k_{61}k_{45} \oplus k_{73}k_{60}k_{45} \oplus k_{72}k_{71}k_{60}k_{45} \oplus k_{71}k_{60}k_{59}k_{45} \oplus \\
& k_{70}k_{69}k_{60}k_{59}k_{45} \oplus k_{74}k_{58}k_{45} \oplus k_{73}k_{58}k_{45} \oplus k_{73}k_{72}k_{58}k_{45} \oplus k_{72}k_{71}k_{58}k_{45} \oplus \\
& k_{60}k_{58}k_{45} \oplus k_{73}k_{59}k_{58}k_{45} \oplus k_{72}k_{71}k_{59}k_{58}k_{45} \oplus k_{57}k_{45} \oplus k_{76}k_{57}k_{45} \oplus \\
& k_{75}k_{74}k_{57}k_{45} \oplus k_{78}k_{56}k_{45} \oplus k_{77}k_{56}k_{45} \oplus k_{79}k_{78}k_{76}k_{56}k_{45} \oplus k_{77}k_{76}k_{56}k_{45} \oplus \\
& k_{75}k_{74}k_{56}k_{45} \oplus k_{79}k_{78}k_{75}k_{74}k_{56}k_{45} \oplus k_{73}k_{56}k_{45} \oplus k_{77}k_{73}k_{56}k_{45} \oplus \\
& k_{76}k_{75}k_{73}k_{56}k_{45} \oplus k_{76}k_{74}k_{73}k_{56}k_{45} \oplus k_{75}k_{74}k_{73}k_{56}k_{45} \oplus k_{72}k_{71}k_{56}k_{45} \oplus \\
& k_{77}k_{72}k_{71}k_{56}k_{45} \oplus k_{76}k_{75}k_{72}k_{71}k_{56}k_{45} \oplus k_{64}k_{56}k_{45} \oplus k_{62}k_{56}k_{45} \oplus \\
& k_{60}k_{56}k_{45} \oplus k_{61}k_{60}k_{56}k_{45} \oplus k_{59}k_{58}k_{56}k_{45} \oplus k_{55}k_{45} \oplus k_{73}k_{55}k_{45} \oplus \\
& k_{72}k_{71}k_{55}k_{45} \oplus k_{61}k_{55}k_{45} \oplus k_{60}k_{59}k_{55}k_{45} \oplus k_{56}k_{55}k_{45} \oplus k_{76}k_{56}k_{55}k_{45} \oplus \\
& k_{75}k_{74}k_{56}k_{55}k_{45} \oplus k_{54}k_{45} \oplus k_{76}k_{56}k_{53}k_{45} \oplus k_{75}k_{74}k_{56}k_{53}k_{45} \oplus k_{52}k_{45} \oplus \\
& k_{51}k_{45} \oplus k_{73}k_{51}k_{45} \oplus k_{72}k_{71}k_{51}k_{45} \oplus k_{56}k_{51}k_{45} \oplus k_{76}k_{50}k_{45} \oplus \\
& k_{75}k_{74}k_{50}k_{45} \oplus k_{76}k_{73}k_{50}k_{45} \oplus k_{75}k_{74}k_{73}k_{50}k_{45} \oplus k_{76}k_{72}k_{71}k_{50}k_{45} \oplus \\
& k_{75}k_{74}k_{72}k_{71}k_{50}k_{45} \oplus k_{56}k_{50}k_{45} \oplus k_{73}k_{56}k_{50}k_{45} \oplus k_{72}k_{71}k_{56}k_{50}k_{45} \oplus \\
& k_{51}k_{50}k_{45} \oplus k_{77}k_{49}k_{45} \oplus k_{76}k_{49}k_{45} \oplus k_{76}k_{75}k_{49}k_{45} \oplus k_{75}k_{74}k_{49}k_{45} \oplus \\
& k_{73}k_{49}k_{45} \oplus k_{77}k_{73}k_{49}k_{45} \oplus k_{76}k_{75}k_{73}k_{49}k_{45} \oplus k_{71}k_{49}k_{45} \oplus k_{72}k_{71}k_{49}k_{45} \oplus
\end{aligned}$$



$$\begin{aligned}
& k_{77}k_{72}k_{71}k_{49}k_{45} \oplus k_{76}k_{75}k_{72}k_{71}k_{49}k_{45} \oplus k_{69}k_{49}k_{45} \oplus k_{70}k_{69}k_{49}k_{45} \oplus \\
& k_{68}k_{49}k_{45} \oplus k_{68}k_{67}k_{49}k_{45} \oplus k_{58}k_{49}k_{45} \oplus k_{56}k_{49}k_{45} \oplus k_{75}k_{56}k_{49}k_{45} \oplus \\
& k_{74}k_{73}k_{56}k_{49}k_{45} \oplus k_{55}k_{49}k_{45} \oplus k_{56}k_{55}k_{49}k_{45} \oplus k_{73}k_{50}k_{49}k_{45} \oplus \\
& k_{72}k_{71}k_{50}k_{49}k_{45} \oplus k_{68}k_{48}k_{45} \oplus k_{73}k_{64}k_{48}k_{45} \oplus k_{72}k_{71}k_{64}k_{48}k_{45} \oplus \\
& k_{60}k_{48}k_{45} \oplus k_{60}k_{58}k_{48}k_{45} \oplus k_{59}k_{58}k_{48}k_{45} \oplus k_{57}k_{48}k_{45} \oplus k_{58}k_{57}k_{48}k_{45} \oplus \\
& k_{76}k_{56}k_{48}k_{45} \oplus k_{75}k_{74}k_{56}k_{48}k_{45} \oplus k_{56}k_{49}k_{48}k_{45} \oplus k_{47}k_{45} \oplus k_{68}k_{47}k_{45} \oplus \\
& k_{60}k_{47}k_{45} \oplus k_{58}k_{47}k_{45} \oplus k_{60}k_{58}k_{47}k_{45} \oplus k_{59}k_{58}k_{47}k_{45} \oplus k_{57}k_{47}k_{45} \oplus \\
& k_{58}k_{57}k_{47}k_{45} \oplus k_{48}k_{47}k_{45} \oplus k_{76}k_{48}k_{47}k_{45} \oplus k_{75}k_{74}k_{48}k_{47}k_{45} \oplus \\
& k_{68}k_{48}k_{47}k_{45} \oplus k_{58}k_{48}k_{47}k_{45} \oplus k_{57}k_{48}k_{47}k_{45} \oplus k_{56}k_{48}k_{47}k_{45} \oplus \\
& k_{79}k_{78}k_{56}k_{48}k_{47}k_{45} \oplus k_{55}k_{48}k_{47}k_{45} \oplus k_{56}k_{53}k_{48}k_{47}k_{45} \oplus k_{49}k_{48}k_{47}k_{45} \oplus \\
& k_{46}k_{45} \oplus k_{78}k_{46}k_{45} \oplus k_{76}k_{46}k_{45} \oplus k_{79}k_{78}k_{76}k_{46}k_{45} \oplus k_{79}k_{78}k_{77}k_{76}k_{46}k_{45} \oplus \\
& k_{76}k_{75}k_{46}k_{45} \oplus k_{75}k_{74}k_{46}k_{45} \oplus k_{79}k_{78}k_{75}k_{74}k_{46}k_{45} \oplus k_{77}k_{75}k_{74}k_{46}k_{45} \oplus \\
& k_{76}k_{75}k_{74}k_{46}k_{45} \oplus k_{71}k_{46}k_{45} \oplus k_{70}k_{69}k_{46}k_{45} \oplus k_{68}k_{46}k_{45} \oplus k_{72}k_{68}k_{46}k_{45} \oplus \\
& k_{71}k_{70}k_{68}k_{46}k_{45} \oplus k_{66}k_{46}k_{45} \oplus k_{63}k_{46}k_{45} \oplus k_{62}k_{61}k_{46}k_{45} \oplus k_{60}k_{46}k_{45} \oplus \\
& k_{72}k_{60}k_{46}k_{45} \oplus k_{71}k_{70}k_{60}k_{46}k_{45} \oplus k_{64}k_{60}k_{46}k_{45} \oplus k_{75}k_{64}k_{60}k_{46}k_{45} \oplus \\
& k_{74}k_{73}k_{64}k_{60}k_{46}k_{45} \oplus k_{64}k_{59}k_{46}k_{45} \oplus k_{75}k_{64}k_{59}k_{46}k_{45} \oplus \\
& k_{74}k_{73}k_{64}k_{59}k_{46}k_{45} \oplus k_{77}k_{58}k_{46}k_{45} \oplus k_{76}k_{58}k_{46}k_{45} \oplus k_{76}k_{74}k_{73}k_{58}k_{46}k_{45} \oplus \\
& k_{75}k_{74}k_{73}k_{58}k_{46}k_{45} \oplus k_{64}k_{58}k_{46}k_{45} \oplus k_{75}k_{64}k_{58}k_{46}k_{45} \oplus \\
& k_{74}k_{73}k_{64}k_{58}k_{46}k_{45} \oplus k_{72}k_{60}k_{58}k_{46}k_{45} \oplus k_{71}k_{70}k_{60}k_{58}k_{46}k_{45} \oplus \\
& k_{64}k_{60}k_{58}k_{46}k_{45} \oplus k_{75}k_{64}k_{60}k_{58}k_{46}k_{45} \oplus k_{74}k_{73}k_{64}k_{60}k_{58}k_{46}k_{45} \oplus \\
& k_{72}k_{59}k_{58}k_{46}k_{45} \oplus k_{71}k_{70}k_{59}k_{58}k_{46}k_{45} \oplus k_{64}k_{59}k_{58}k_{46}k_{45} \oplus \\
& k_{75}k_{64}k_{59}k_{58}k_{46}k_{45} \oplus k_{74}k_{73}k_{64}k_{59}k_{58}k_{46}k_{45} \oplus k_{57}k_{46}k_{45} \oplus k_{78}k_{57}k_{46}k_{45} \oplus \\
& k_{77}k_{76}k_{57}k_{46}k_{45} \oplus k_{72}k_{57}k_{46}k_{45} \oplus k_{71}k_{70}k_{57}k_{46}k_{45} \oplus k_{78}k_{58}k_{57}k_{46}k_{45} \oplus \\
& k_{76}k_{58}k_{57}k_{46}k_{45} \oplus k_{77}k_{76}k_{58}k_{57}k_{46}k_{45} \oplus k_{75}k_{74}k_{58}k_{57}k_{46}k_{45} \oplus \\
& k_{72}k_{58}k_{57}k_{46}k_{45} \oplus k_{71}k_{70}k_{58}k_{57}k_{46}k_{45} \oplus k_{78}k_{56}k_{46}k_{45} \oplus k_{77}k_{56}k_{46}k_{45} \oplus \\
& k_{77}k_{76}k_{56}k_{46}k_{45} \oplus k_{76}k_{75}k_{56}k_{46}k_{45} \oplus k_{64}k_{56}k_{46}k_{45} \oplus k_{57}k_{56}k_{46}k_{45} \oplus \\
& k_{55}k_{46}k_{45} \oplus k_{53}k_{46}k_{45} \oplus k_{78}k_{53}k_{46}k_{45} \oplus k_{76}k_{53}k_{46}k_{45} \oplus k_{77}k_{76}k_{53}k_{46}k_{45} \oplus \\
& k_{75}k_{74}k_{53}k_{46}k_{45} \oplus k_{51}k_{46}k_{45} \oplus k_{79}k_{78}k_{51}k_{46}k_{45} \oplus k_{57}k_{51}k_{46}k_{45} \oplus \\
& k_{58}k_{57}k_{51}k_{46}k_{45} \oplus k_{56}k_{51}k_{46}k_{45} \oplus k_{53}k_{51}k_{46}k_{45} \oplus k_{76}k_{50}k_{46}k_{45} \oplus \\
& k_{75}k_{74}k_{50}k_{46}k_{45} \oplus k_{58}k_{50}k_{46}k_{45} \oplus k_{56}k_{50}k_{46}k_{45} \oplus k_{49}k_{46}k_{45} \oplus \\
& k_{79}k_{78}k_{49}k_{46}k_{45} \oplus k_{77}k_{49}k_{46}k_{45} \oplus k_{76}k_{75}k_{49}k_{46}k_{45} \oplus k_{58}k_{49}k_{46}k_{45} \oplus \\
& k_{75}k_{58}k_{49}k_{46}k_{45} \oplus k_{74}k_{73}k_{58}k_{49}k_{46}k_{45} \oplus k_{58}k_{57}k_{49}k_{46}k_{45} \oplus k_{53}k_{49}k_{46}k_{45} \oplus \\
& k_{50}k_{49}k_{46}k_{45} \oplus k_{48}k_{46}k_{45} \oplus k_{64}k_{60}k_{48}k_{46}k_{45} \oplus k_{64}k_{59}k_{48}k_{46}k_{45} \oplus \\
& k_{76}k_{58}k_{48}k_{46}k_{45} \oplus k_{75}k_{74}k_{58}k_{48}k_{46}k_{45} \oplus k_{64}k_{58}k_{48}k_{46}k_{45} \oplus \\
& k_{64}k_{60}k_{58}k_{48}k_{46}k_{45} \oplus k_{64}k_{59}k_{58}k_{48}k_{46}k_{45} \oplus k_{58}k_{49}k_{48}k_{46}k_{45} \oplus k_{47}k_{46}k_{45} \oplus \\
& k_{68}k_{47}k_{46}k_{45} \oplus k_{60}k_{47}k_{46}k_{45} \oplus k_{60}k_{58}k_{47}k_{46}k_{45} \oplus k_{59}k_{58}k_{47}k_{46}k_{45} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{57}k_{47}k_{46}k_{45} \oplus k_{58}k_{57}k_{47}k_{46}k_{45} \oplus k_{78}k_{44} \oplus k_{79}k_{78}k_{44} \oplus k_{77}k_{76}k_{44} \oplus \\
& k_{76}k_{72}k_{44} \oplus k_{75}k_{74}k_{72}k_{44} \oplus k_{70}k_{44} \oplus k_{76}k_{71}k_{70}k_{44} \oplus k_{75}k_{74}k_{71}k_{70}k_{44} \oplus \\
& k_{68}k_{44} \oplus k_{69}k_{68}k_{44} \oplus k_{66}k_{44} \oplus k_{67}k_{66}k_{44} \oplus k_{62}k_{44} \oplus k_{72}k_{61}k_{44} \oplus \\
& k_{71}k_{70}k_{61}k_{44} \oplus k_{69}k_{60}k_{44} \oplus k_{68}k_{67}k_{60}k_{44} \oplus k_{61}k_{60}k_{44} \oplus k_{60}k_{59}k_{44} \oplus \\
& k_{72}k_{60}k_{59}k_{44} \oplus k_{71}k_{70}k_{60}k_{59}k_{44} \oplus k_{58}k_{44} \oplus k_{60}k_{58}k_{57}k_{44} \oplus k_{59}k_{58}k_{57}k_{44} \oplus \\
& k_{55}k_{44} \oplus k_{61}k_{55}k_{44} \oplus k_{60}k_{59}k_{55}k_{44} \oplus k_{54}k_{44} \oplus k_{55}k_{54}k_{44} \oplus k_{53}k_{44} \oplus \\
& k_{51}k_{44} \oplus k_{49}k_{44} \oplus k_{78}k_{49}k_{44} \oplus k_{79}k_{78}k_{49}k_{44} \oplus k_{77}k_{76}k_{49}k_{44} \oplus k_{72}k_{49}k_{44} \oplus \\
& k_{71}k_{70}k_{49}k_{44} \oplus k_{64}k_{49}k_{44} \oplus k_{59}k_{49}k_{44} \oplus k_{58}k_{49}k_{44} \oplus k_{57}k_{49}k_{44} \oplus \\
& k_{58}k_{57}k_{49}k_{44} \oplus k_{53}k_{49}k_{44} \oplus k_{51}k_{49}k_{44} \oplus k_{74}k_{48}k_{44} \oplus k_{73}k_{72}k_{48}k_{44} \oplus \\
& k_{47}k_{44} \oplus k_{78}k_{48}k_{47}k_{44} \oplus k_{79}k_{78}k_{48}k_{47}k_{44} \oplus k_{77}k_{76}k_{48}k_{47}k_{44} \oplus \\
& k_{64}k_{48}k_{47}k_{44} \oplus k_{59}k_{48}k_{47}k_{44} \oplus k_{58}k_{48}k_{47}k_{44} \oplus k_{57}k_{48}k_{47}k_{44} \oplus \\
& k_{58}k_{57}k_{48}k_{47}k_{44} \oplus k_{53}k_{48}k_{47}k_{44} \oplus k_{51}k_{48}k_{47}k_{44} \oplus k_{46}k_{44} \oplus k_{47}k_{46}k_{44} \oplus \\
& k_{74}k_{47}k_{46}k_{44} \oplus k_{73}k_{72}k_{47}k_{46}k_{44} \oplus k_{78}k_{45}k_{44} \oplus k_{76}k_{45}k_{44} \oplus k_{77}k_{76}k_{45}k_{44} \oplus \\
& k_{74}k_{45}k_{44} \oplus k_{75}k_{74}k_{45}k_{44} \oplus k_{73}k_{45}k_{44} \oplus k_{73}k_{72}k_{45}k_{44} \oplus k_{71}k_{45}k_{44} \oplus \\
& k_{72}k_{71}k_{45}k_{44} \oplus k_{70}k_{69}k_{45}k_{44} \oplus k_{66}k_{45}k_{44} \oplus k_{79}k_{64}k_{45}k_{44} \oplus \\
& k_{78}k_{77}k_{64}k_{45}k_{44} \oplus k_{75}k_{64}k_{45}k_{44} \oplus k_{74}k_{73}k_{64}k_{45}k_{44} \oplus k_{58}k_{45}k_{44} \oplus \\
& k_{78}k_{58}k_{45}k_{44} \oplus k_{77}k_{76}k_{58}k_{45}k_{44} \oplus k_{74}k_{58}k_{45}k_{44} \oplus k_{73}k_{58}k_{45}k_{44} \oplus \\
& k_{73}k_{72}k_{58}k_{45}k_{44} \oplus k_{72}k_{71}k_{58}k_{45}k_{44} \oplus k_{64}k_{58}k_{45}k_{44} \oplus k_{79}k_{64}k_{58}k_{45}k_{44} \oplus \\
& k_{78}k_{77}k_{64}k_{58}k_{45}k_{44} \oplus k_{75}k_{64}k_{58}k_{45}k_{44} \oplus k_{74}k_{73}k_{64}k_{58}k_{45}k_{44} \oplus \\
& k_{60}k_{58}k_{45}k_{44} \oplus k_{59}k_{58}k_{45}k_{44} \oplus k_{57}k_{45}k_{44} \oplus k_{58}k_{57}k_{45}k_{44} \oplus k_{56}k_{45}k_{44} \oplus \\
& k_{64}k_{52}k_{45}k_{44} \oplus k_{64}k_{58}k_{52}k_{45}k_{44} \oplus k_{51}k_{45}k_{44} \oplus k_{58}k_{51}k_{45}k_{44} \oplus k_{49}k_{45}k_{44} \oplus \\
& k_{64}k_{48}k_{45}k_{44} \oplus k_{64}k_{58}k_{48}k_{45}k_{44} \oplus k_{47}k_{45}k_{44} \oplus k_{58}k_{47}k_{45}k_{44} \oplus \\
& k_{58}k_{46}k_{45}k_{44} \oplus k_{43} \oplus k_{79}k_{78}k_{43} \oplus k_{67}k_{43} \oplus k_{70}k_{60}k_{43} \oplus k_{69}k_{60}k_{43} \oplus \\
& k_{69}k_{68}k_{60}k_{43} \oplus k_{68}k_{67}k_{60}k_{43} \oplus k_{60}k_{58}k_{43} \oplus k_{66}k_{56}k_{43} \oplus k_{60}k_{56}k_{43} \oplus \\
& k_{60}k_{57}k_{56}k_{43} \oplus k_{55}k_{43} \oplus k_{60}k_{55}k_{43} \oplus k_{60}k_{56}k_{55}k_{43} \oplus k_{54}k_{43} \oplus k_{55}k_{54}k_{43} \oplus \\
& k_{60}k_{55}k_{54}k_{43} \oplus k_{53}k_{43} \oplus k_{51}k_{43} \oplus k_{50}k_{49}k_{43} \oplus k_{44}k_{43} \oplus k_{79}k_{78}k_{42} \oplus \\
& k_{77}k_{42} \oplus k_{75}k_{42} \oplus k_{76}k_{75}k_{42} \oplus k_{74}k_{42} \oplus k_{76}k_{72}k_{42} \oplus k_{75}k_{74}k_{72}k_{42} \oplus \\
& k_{73}k_{72}k_{42} \oplus k_{72}k_{71}k_{42} \oplus k_{74}k_{72}k_{71}k_{42} \oplus k_{73}k_{72}k_{71}k_{42} \oplus k_{76}k_{71}k_{70}k_{42} \oplus \\
& k_{75}k_{74}k_{71}k_{70}k_{42} \oplus k_{73}k_{71}k_{70}k_{42} \oplus k_{72}k_{71}k_{70}k_{42} \oplus k_{68}k_{42} \oplus k_{66}k_{42} \oplus \\
& k_{67}k_{66}k_{42} \oplus k_{74}k_{62}k_{42} \oplus k_{73}k_{72}k_{62}k_{42} \oplus k_{61}k_{42} \oplus k_{79}k_{78}k_{60}k_{42} \oplus \\
& k_{75}k_{60}k_{42} \oplus k_{74}k_{73}k_{60}k_{42} \oplus k_{70}k_{60}k_{42} \oplus k_{69}k_{68}k_{60}k_{42} \oplus k_{67}k_{60}k_{42} \oplus \\
& k_{66}k_{65}k_{60}k_{42} \oplus k_{64}k_{60}k_{42} \oplus k_{62}k_{60}k_{42} \oplus k_{59}k_{42} \oplus k_{60}k_{58}k_{42} \oplus k_{60}k_{57}k_{42} \oplus \\
& k_{58}k_{57}k_{42} \oplus k_{56}k_{42} \oplus k_{65}k_{55}k_{42} \oplus k_{56}k_{55}k_{42} \oplus k_{60}k_{56}k_{55}k_{42} \oplus k_{65}k_{54}k_{42} \oplus \\
& k_{56}k_{54}k_{42} \oplus k_{55}k_{54}k_{42} \oplus k_{53}k_{42} \oplus k_{60}k_{53}k_{42} \oplus k_{60}k_{54}k_{53}k_{42} \oplus k_{52}k_{42} \oplus \\
& k_{50}k_{42} \oplus k_{51}k_{50}k_{42} \oplus k_{72}k_{49}k_{42} \oplus k_{71}k_{70}k_{49}k_{42} \oplus k_{60}k_{48}k_{42} \oplus k_{47}k_{42} \oplus \\
& k_{73}k_{47}k_{42} \oplus k_{72}k_{71}k_{47}k_{42} \oplus k_{62}k_{47}k_{42} \oplus k_{74}k_{46}k_{42} \oplus k_{72}k_{46}k_{42} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{73}k_{72}k_{46}k_{42} \oplus k_{71}k_{70}k_{46}k_{42} \oplus k_{76}k_{45}k_{42} \oplus k_{75}k_{74}k_{45}k_{42} \oplus k_{73}k_{45}k_{42} \oplus \\
& k_{72}k_{71}k_{45}k_{42} \oplus k_{49}k_{45}k_{42} \oplus k_{46}k_{45}k_{42} \oplus k_{60}k_{44}k_{42} \oplus k_{60}k_{43}k_{42} \oplus \\
& k_{69}k_{60}k_{43}k_{42} \oplus k_{68}k_{67}k_{60}k_{43}k_{42} \oplus k_{57}k_{43}k_{42} \oplus k_{56}k_{43}k_{42} \oplus k_{55}k_{43}k_{42} \oplus \\
& k_{54}k_{43}k_{42} \oplus k_{41} \oplus k_{74}k_{41} \oplus k_{73}k_{72}k_{41} \oplus k_{70}k_{41} \oplus k_{69}k_{41} \oplus k_{69}k_{68}k_{41} \oplus \\
& k_{68}k_{67}k_{41} \oplus k_{65}k_{41} \oplus k_{61}k_{41} \oplus k_{73}k_{61}k_{41} \oplus k_{72}k_{71}k_{61}k_{41} \oplus k_{60}k_{41} \oplus \\
& k_{60}k_{59}k_{41} \oplus k_{73}k_{60}k_{59}k_{41} \oplus k_{72}k_{71}k_{60}k_{59}k_{41} \oplus k_{59}k_{58}k_{41} \oplus k_{56}k_{41} \oplus \\
& k_{73}k_{56}k_{41} \oplus k_{72}k_{56}k_{41} \oplus k_{72}k_{71}k_{56}k_{41} \oplus k_{71}k_{70}k_{56}k_{41} \oplus k_{65}k_{56}k_{41} \oplus \\
& k_{47}k_{41} \oplus k_{61}k_{46}k_{41} \oplus k_{60}k_{59}k_{46}k_{41} \oplus k_{56}k_{46}k_{41} \oplus k_{56}k_{45}k_{41} \oplus k_{44}k_{41} \oplus \\
& k_{43}k_{41} \oplus k_{70}k_{42}k_{41} \oplus k_{69}k_{68}k_{42}k_{41} \oplus k_{60}k_{42}k_{41} \oplus k_{70}k_{60}k_{42}k_{41} \oplus \\
& k_{69}k_{68}k_{60}k_{42}k_{41} \oplus k_{55}k_{42}k_{41} \oplus k_{60}k_{55}k_{42}k_{41} \oplus k_{60}k_{54}k_{53}k_{42}k_{41} \oplus \\
& k_{51}k_{42}k_{41} \oplus k_{50}k_{49}k_{42}k_{41} \oplus k_{43}k_{42}k_{41} \oplus k_{60}k_{43}k_{42}k_{41} \oplus k_{40} \oplus k_{79}k_{40} \oplus \\
& k_{78}k_{40} \oplus k_{78}k_{77}k_{40} \oplus k_{79}k_{78}k_{77}k_{40} \oplus k_{77}k_{76}k_{40} \oplus k_{68}k_{40} \oplus k_{79}k_{68}k_{40} \oplus \\
& k_{78}k_{77}k_{68}k_{40} \oplus k_{66}k_{40} \oplus k_{64}k_{40} \oplus k_{65}k_{64}k_{40} \oplus k_{69}k_{60}k_{40} \oplus k_{68}k_{67}k_{60}k_{40} \oplus \\
& k_{58}k_{40} \oplus k_{60}k_{58}k_{40} \oplus k_{57}k_{40} \oplus k_{56}k_{40} \oplus k_{54}k_{40} \oplus k_{55}k_{54}k_{40} \oplus k_{53}k_{40} \oplus \\
& k_{79}k_{53}k_{40} \oplus k_{78}k_{77}k_{53}k_{40} \oplus k_{52}k_{40} \oplus k_{79}k_{78}k_{52}k_{40} \oplus k_{68}k_{52}k_{40} \oplus \\
& k_{53}k_{52}k_{40} \oplus k_{64}k_{51}k_{40} \oplus k_{50}k_{40} \oplus k_{64}k_{50}k_{40} \oplus k_{49}k_{40} \oplus k_{64}k_{49}k_{40} \oplus \\
& k_{50}k_{49}k_{40} \oplus k_{64}k_{50}k_{49}k_{40} \oplus k_{48}k_{40} \oplus k_{74}k_{48}k_{40} \oplus k_{73}k_{72}k_{48}k_{40} \oplus \\
& k_{61}k_{48}k_{40} \oplus k_{60}k_{59}k_{48}k_{40} \oplus k_{49}k_{48}k_{40} \oplus k_{64}k_{49}k_{48}k_{40} \oplus k_{64}k_{48}k_{47}k_{40} \oplus \\
& k_{74}k_{47}k_{46}k_{40} \oplus k_{73}k_{72}k_{47}k_{46}k_{40} \oplus k_{61}k_{47}k_{46}k_{40} \oplus k_{60}k_{59}k_{47}k_{46}k_{40} \oplus \\
& k_{45}k_{40} \oplus k_{60}k_{42}k_{40} \oplus k_{41}k_{40} \oplus k_{60}k_{57}k_{41}k_{40} \oplus k_{56}k_{41}k_{40} \oplus \\
& k_{60}k_{56}k_{55}k_{41}k_{40} \oplus k_{55}k_{54}k_{41}k_{40} \oplus k_{52}k_{41}k_{40} \oplus k_{51}k_{50}k_{41}k_{40} \oplus k_{43}k_{41}k_{40} \oplus \\
& k_{42}k_{41}k_{40} \oplus k_{39} \oplus k_{79}k_{39} \oplus k_{78}k_{77}k_{39} \oplus k_{79}k_{78}k_{77}k_{39} \oplus k_{75}k_{39} \oplus \\
& k_{75}k_{74}k_{39} \oplus k_{75}k_{73}k_{72}k_{39} \oplus k_{74}k_{73}k_{72}k_{39} \oplus k_{68}k_{39} \oplus k_{79}k_{68}k_{39} \oplus \\
& k_{78}k_{77}k_{68}k_{39} \oplus k_{67}k_{39} \oplus k_{79}k_{65}k_{39} \oplus k_{78}k_{77}k_{65}k_{39} \oplus k_{79}k_{78}k_{77}k_{65}k_{39} \oplus \\
& k_{68}k_{65}k_{39} \oplus k_{79}k_{68}k_{65}k_{39} \oplus k_{78}k_{77}k_{68}k_{65}k_{39} \oplus k_{66}k_{65}k_{39} \oplus k_{64}k_{63}k_{39} \oplus \\
& k_{79}k_{64}k_{63}k_{39} \oplus k_{78}k_{77}k_{64}k_{63}k_{39} \oplus k_{79}k_{78}k_{77}k_{64}k_{63}k_{39} \oplus k_{68}k_{64}k_{63}k_{39} \oplus \\
& k_{79}k_{68}k_{64}k_{63}k_{39} \oplus k_{78}k_{77}k_{68}k_{64}k_{63}k_{39} \oplus k_{64}k_{62}k_{61}k_{39} \oplus k_{77}k_{60}k_{39} \oplus \\
& k_{76}k_{75}k_{60}k_{39} \oplus k_{65}k_{57}k_{39} \oplus k_{64}k_{63}k_{57}k_{39} \oplus k_{54}k_{39} \oplus k_{65}k_{54}k_{39} \oplus \\
& k_{64}k_{63}k_{54}k_{39} \oplus k_{53}k_{39} \oplus k_{79}k_{53}k_{39} \oplus k_{78}k_{77}k_{53}k_{39} \oplus k_{65}k_{53}k_{39} \oplus \\
& k_{79}k_{65}k_{53}k_{39} \oplus k_{78}k_{77}k_{65}k_{53}k_{39} \oplus k_{64}k_{63}k_{53}k_{39} \oplus k_{79}k_{64}k_{63}k_{53}k_{39} \oplus \\
& k_{78}k_{77}k_{64}k_{63}k_{53}k_{39} \oplus k_{79}k_{78}k_{52}k_{39} \oplus k_{68}k_{52}k_{39} \oplus k_{65}k_{52}k_{39} \oplus \\
& k_{79}k_{78}k_{65}k_{52}k_{39} \oplus k_{68}k_{65}k_{52}k_{39} \oplus k_{64}k_{63}k_{52}k_{39} \oplus k_{79}k_{78}k_{64}k_{63}k_{52}k_{39} \oplus \\
& k_{68}k_{64}k_{63}k_{52}k_{39} \oplus k_{53}k_{52}k_{39} \oplus k_{65}k_{53}k_{52}k_{39} \oplus k_{64}k_{63}k_{53}k_{52}k_{39} \oplus \\
& k_{60}k_{50}k_{39} \oplus k_{51}k_{50}k_{39} \oplus k_{49}k_{39} \oplus k_{74}k_{48}k_{39} \oplus k_{73}k_{72}k_{48}k_{39} \oplus k_{75}k_{47}k_{39} \oplus \\
& k_{74}k_{73}k_{47}k_{39} \oplus k_{47}k_{46}k_{39} \oplus k_{45}k_{39} \oplus k_{65}k_{45}k_{39} \oplus k_{64}k_{63}k_{45}k_{39} \oplus k_{40}k_{39} \oplus \\
& k_{70}k_{40}k_{39} \oplus k_{69}k_{68}k_{40}k_{39} \oplus k_{43}k_{40}k_{39} \oplus k_{38} \oplus k_{79}k_{38} \oplus k_{78}k_{77}k_{38} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{79}k_{78}k_{77}k_{38} \oplus k_{68}k_{38} \oplus k_{79}k_{68}k_{38} \oplus k_{78}k_{77}k_{68}k_{38} \oplus k_{79}k_{66}k_{38} \oplus \\
& k_{78}k_{77}k_{66}k_{38} \oplus k_{79}k_{78}k_{77}k_{66}k_{38} \oplus k_{68}k_{66}k_{38} \oplus k_{79}k_{68}k_{66}k_{38} \oplus \\
& k_{78}k_{77}k_{68}k_{66}k_{38} \oplus k_{79}k_{65}k_{64}k_{38} \oplus k_{78}k_{77}k_{65}k_{64}k_{38} \oplus k_{79}k_{78}k_{77}k_{65}k_{64}k_{38} \oplus \\
& k_{68}k_{65}k_{64}k_{38} \oplus k_{79}k_{68}k_{65}k_{64}k_{38} \oplus k_{78}k_{77}k_{68}k_{65}k_{64}k_{38} \oplus k_{79}k_{78}k_{62}k_{38} \oplus \\
& k_{74}k_{62}k_{38} \oplus k_{73}k_{72}k_{62}k_{38} \oplus k_{68}k_{62}k_{38} \oplus k_{64}k_{62}k_{38} \oplus k_{60}k_{38} \oplus k_{69}k_{60}k_{38} \oplus \\
& k_{68}k_{67}k_{60}k_{38} \oplus k_{79}k_{78}k_{61}k_{60}k_{38} \oplus k_{68}k_{61}k_{60}k_{38} \oplus k_{64}k_{61}k_{60}k_{38} \oplus k_{58}k_{38} \oplus \\
& k_{66}k_{57}k_{38} \oplus k_{65}k_{64}k_{57}k_{38} \oplus k_{60}k_{57}k_{38} \oplus k_{54}k_{38} \oplus k_{66}k_{54}k_{38} \oplus \\
& k_{65}k_{64}k_{54}k_{38} \oplus k_{53}k_{38} \oplus k_{79}k_{53}k_{38} \oplus k_{78}k_{77}k_{53}k_{38} \oplus k_{66}k_{53}k_{38} \oplus \\
& k_{79}k_{66}k_{53}k_{38} \oplus k_{78}k_{77}k_{66}k_{53}k_{38} \oplus k_{65}k_{64}k_{53}k_{38} \oplus k_{79}k_{65}k_{64}k_{53}k_{38} \oplus \\
& k_{78}k_{77}k_{65}k_{64}k_{53}k_{38} \oplus k_{62}k_{53}k_{38} \oplus k_{61}k_{60}k_{53}k_{38} \oplus k_{52}k_{38} \oplus k_{79}k_{78}k_{52}k_{38} \oplus \\
& k_{68}k_{52}k_{38} \oplus k_{66}k_{52}k_{38} \oplus k_{79}k_{78}k_{66}k_{52}k_{38} \oplus k_{68}k_{66}k_{52}k_{38} \oplus k_{65}k_{64}k_{52}k_{38} \oplus \\
& k_{79}k_{78}k_{65}k_{64}k_{52}k_{38} \oplus k_{68}k_{65}k_{64}k_{52}k_{38} \oplus k_{53}k_{52}k_{38} \oplus k_{66}k_{53}k_{52}k_{38} \oplus \\
& k_{65}k_{64}k_{53}k_{52}k_{38} \oplus k_{62}k_{47}k_{38} \oplus k_{45}k_{38} \oplus k_{66}k_{45}k_{38} \oplus k_{65}k_{64}k_{45}k_{38} \oplus \\
& k_{60}k_{42}k_{38} \oplus k_{79}k_{39}k_{38} \oplus k_{78}k_{77}k_{39}k_{38} \oplus k_{79}k_{78}k_{77}k_{39}k_{38} \oplus k_{68}k_{39}k_{38} \oplus \\
& k_{79}k_{68}k_{39}k_{38} \oplus k_{78}k_{77}k_{68}k_{39}k_{38} \oplus k_{57}k_{39}k_{38} \oplus k_{54}k_{39}k_{38} \oplus k_{53}k_{39}k_{38} \oplus \\
& k_{79}k_{53}k_{39}k_{38} \oplus k_{78}k_{77}k_{53}k_{39}k_{38} \oplus k_{52}k_{39}k_{38} \oplus k_{79}k_{78}k_{52}k_{39}k_{38} \oplus \\
& k_{68}k_{52}k_{39}k_{38} \oplus k_{53}k_{52}k_{39}k_{38} \oplus k_{45}k_{39}k_{38} \oplus k_{37} \oplus k_{64}k_{37} \oplus k_{63}k_{37} \oplus \\
& k_{62}k_{61}k_{37} \oplus k_{38}k_{37} \oplus k_{36} \oplus k_{73}k_{36} \oplus k_{72}k_{36} \oplus k_{73}k_{72}k_{36} \oplus k_{71}k_{70}k_{36} \oplus \\
& k_{73}k_{71}k_{70}k_{36} \oplus k_{72}k_{71}k_{70}k_{36} \oplus k_{67}k_{36} \oplus k_{66}k_{36} \oplus k_{66}k_{65}k_{36} \oplus k_{67}k_{64}k_{36} \oplus \\
& k_{66}k_{64}k_{36} \oplus k_{65}k_{64}k_{36} \oplus k_{66}k_{65}k_{64}k_{36} \oplus k_{63}k_{62}k_{36} \oplus k_{60}k_{36} \oplus k_{61}k_{60}k_{36} \oplus \\
& k_{59}k_{36} \oplus k_{60}k_{58}k_{36} \oplus k_{58}k_{57}k_{36} \oplus k_{56}k_{36} \oplus k_{55}k_{36} \oplus k_{66}k_{54}k_{36} \oplus k_{46}k_{36} \oplus \\
& k_{72}k_{46}k_{36} \oplus k_{71}k_{70}k_{46}k_{36} \oplus k_{45}k_{36} \oplus k_{73}k_{45}k_{36} \oplus k_{72}k_{71}k_{45}k_{36} \oplus \\
& k_{46}k_{45}k_{36} \oplus k_{40}k_{36} \oplus k_{64}k_{40}k_{36} \oplus k_{64}k_{39}k_{36} \oplus k_{37}k_{36} \oplus k_{79}k_{78}k_{37}k_{36} \oplus \\
& k_{68}k_{37}k_{36} \oplus k_{64}k_{37}k_{36} \oplus k_{79}k_{78}k_{62}k_{37}k_{36} \oplus k_{68}k_{62}k_{37}k_{36} \oplus k_{64}k_{62}k_{37}k_{36} \oplus \\
& k_{60}k_{37}k_{36} \oplus k_{69}k_{60}k_{37}k_{36} \oplus k_{68}k_{67}k_{60}k_{37}k_{36} \oplus k_{79}k_{78}k_{61}k_{60}k_{37}k_{36} \oplus \\
& k_{68}k_{61}k_{60}k_{37}k_{36} \oplus k_{64}k_{61}k_{60}k_{37}k_{36} \oplus k_{60}k_{57}k_{37}k_{36} \oplus k_{53}k_{37}k_{36} \oplus \\
& k_{62}k_{53}k_{37}k_{36} \oplus k_{61}k_{60}k_{53}k_{37}k_{36} \oplus k_{60}k_{42}k_{37}k_{36} \oplus k_{35} \oplus k_{78}k_{35} \oplus k_{77}k_{35} \oplus \\
& k_{76}k_{35} \oplus k_{75}k_{74}k_{35} \oplus k_{77}k_{75}k_{74}k_{35} \oplus k_{76}k_{75}k_{74}k_{35} \oplus k_{73}k_{35} \oplus k_{71}k_{35} \oplus \\
& k_{72}k_{71}k_{35} \oplus k_{70}k_{69}k_{35} \oplus k_{68}k_{35} \oplus k_{63}k_{35} \oplus k_{62}k_{35} \oplus k_{74}k_{62}k_{35} \oplus \\
& k_{73}k_{72}k_{62}k_{35} \oplus k_{73}k_{61}k_{35} \oplus k_{72}k_{71}k_{61}k_{35} \oplus k_{62}k_{61}k_{35} \oplus k_{73}k_{60}k_{59}k_{35} \oplus \\
& k_{72}k_{71}k_{60}k_{59}k_{35} \oplus k_{58}k_{35} \oplus k_{59}k_{58}k_{35} \oplus k_{64}k_{57}k_{35} \oplus k_{56}k_{35} \oplus k_{78}k_{56}k_{35} \oplus \\
& k_{77}k_{76}k_{56}k_{35} \oplus k_{73}k_{56}k_{35} \oplus k_{72}k_{56}k_{35} \oplus k_{72}k_{71}k_{56}k_{35} \oplus k_{71}k_{70}k_{56}k_{35} \oplus \\
& k_{74}k_{55}k_{35} \oplus k_{73}k_{72}k_{55}k_{35} \oplus k_{61}k_{55}k_{35} \oplus k_{60}k_{59}k_{55}k_{35} \oplus k_{53}k_{35} \oplus \\
& k_{79}k_{78}k_{53}k_{35} \oplus k_{68}k_{53}k_{35} \oplus k_{64}k_{53}k_{35} \oplus k_{79}k_{78}k_{52}k_{35} \oplus k_{68}k_{52}k_{35} \oplus \\
& k_{64}k_{52}k_{35} \oplus k_{53}k_{52}k_{35} \oplus k_{51}k_{35} \oplus k_{56}k_{51}k_{35} \oplus k_{79}k_{78}k_{52}k_{51}k_{35} \oplus \\
& k_{68}k_{52}k_{51}k_{35} \oplus k_{64}k_{52}k_{51}k_{35} \oplus k_{53}k_{52}k_{51}k_{35} \oplus k_{50}k_{35} \oplus k_{76}k_{50}k_{35} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{75}k_{74}k_{50}k_{35} \oplus k_{60}k_{50}k_{35} \oplus k_{79}k_{78}k_{51}k_{50}k_{35} \oplus k_{68}k_{51}k_{50}k_{35} \oplus \\
& k_{64}k_{51}k_{50}k_{35} \oplus k_{53}k_{51}k_{50}k_{35} \oplus k_{49}k_{35} \oplus k_{77}k_{49}k_{35} \oplus k_{76}k_{75}k_{49}k_{35} \oplus \\
& k_{50}k_{49}k_{35} \oplus k_{60}k_{49}k_{48}k_{35} \oplus k_{62}k_{47}k_{35} \oplus k_{55}k_{47}k_{35} \oplus k_{46}k_{35} \oplus k_{61}k_{46}k_{35} \oplus \\
& k_{60}k_{59}k_{46}k_{35} \oplus k_{56}k_{46}k_{35} \oplus k_{56}k_{45}k_{35} \oplus k_{44}k_{35} \oplus k_{79}k_{78}k_{38}k_{35} \oplus \\
& k_{68}k_{38}k_{35} \oplus k_{64}k_{38}k_{35} \oplus k_{53}k_{38}k_{35} \oplus k_{36}k_{35} \oplus k_{79}k_{78}k_{37}k_{36}k_{35} \oplus \\
& k_{68}k_{37}k_{36}k_{35} \oplus k_{64}k_{37}k_{36}k_{35} \oplus k_{53}k_{37}k_{36}k_{35} \oplus k_{34} \oplus k_{77}k_{34} \oplus k_{78}k_{76}k_{34} \oplus \\
& k_{77}k_{76}k_{34} \oplus k_{79}k_{78}k_{77}k_{76}k_{34} \oplus k_{75}k_{34} \oplus k_{78}k_{75}k_{74}k_{34} \oplus k_{77}k_{76}k_{75}k_{74}k_{34} \oplus \\
& k_{79}k_{78}k_{73}k_{34} \oplus k_{77}k_{73}k_{34} \oplus k_{78}k_{76}k_{73}k_{34} \oplus k_{77}k_{76}k_{73}k_{34} \oplus k_{75}k_{73}k_{34} \oplus \\
& k_{75}k_{74}k_{73}k_{34} \oplus k_{78}k_{75}k_{74}k_{73}k_{34} \oplus k_{77}k_{76}k_{75}k_{74}k_{73}k_{34} \oplus k_{73}k_{72}k_{34} \oplus \\
& k_{75}k_{73}k_{72}k_{34} \oplus k_{74}k_{73}k_{72}k_{34} \oplus k_{72}k_{71}k_{34} \oplus k_{79}k_{78}k_{72}k_{71}k_{34} \oplus \\
& k_{77}k_{72}k_{71}k_{34} \oplus k_{78}k_{76}k_{72}k_{71}k_{34} \oplus k_{77}k_{76}k_{72}k_{71}k_{34} \oplus k_{75}k_{72}k_{71}k_{34} \oplus \\
& k_{74}k_{72}k_{71}k_{34} \oplus k_{75}k_{74}k_{72}k_{71}k_{34} \oplus k_{78}k_{75}k_{74}k_{72}k_{71}k_{34} \oplus \\
& k_{77}k_{76}k_{75}k_{74}k_{72}k_{71}k_{34} \oplus k_{73}k_{72}k_{71}k_{34} \oplus k_{74}k_{73}k_{72}k_{71}k_{34} \oplus \\
& k_{76}k_{74}k_{73}k_{72}k_{71}k_{34} \oplus k_{75}k_{74}k_{73}k_{72}k_{71}k_{34} \oplus k_{70}k_{34} \oplus k_{71}k_{70}k_{34} \oplus \\
& k_{72}k_{70}k_{69}k_{34} \oplus k_{71}k_{70}k_{69}k_{34} \oplus k_{68}k_{34} \oplus k_{69}k_{68}k_{34} \oplus k_{66}k_{34} \oplus k_{64}k_{34} \oplus \\
& k_{79}k_{64}k_{34} \oplus k_{78}k_{77}k_{64}k_{34} \oplus k_{75}k_{64}k_{34} \oplus k_{73}k_{64}k_{34} \oplus k_{74}k_{73}k_{64}k_{34} \oplus \\
& k_{72}k_{71}k_{64}k_{34} \oplus k_{75}k_{62}k_{34} \oplus k_{75}k_{74}k_{62}k_{34} \oplus k_{73}k_{62}k_{34} \oplus k_{75}k_{73}k_{72}k_{62}k_{34} \oplus \\
& k_{74}k_{73}k_{72}k_{62}k_{34} \oplus k_{72}k_{71}k_{62}k_{34} \oplus k_{78}k_{60}k_{34} \oplus k_{77}k_{76}k_{60}k_{34} \oplus k_{75}k_{60}k_{34} \oplus \\
& k_{74}k_{60}k_{34} \oplus k_{73}k_{60}k_{34} \oplus k_{74}k_{73}k_{60}k_{34} \oplus k_{73}k_{72}k_{60}k_{34} \oplus k_{72}k_{71}k_{60}k_{34} \oplus \\
& k_{64}k_{60}k_{34} \oplus k_{73}k_{61}k_{60}k_{34} \oplus k_{72}k_{71}k_{61}k_{60}k_{34} \oplus k_{58}k_{34} \oplus k_{78}k_{58}k_{34} \oplus \\
& k_{77}k_{76}k_{58}k_{34} \oplus k_{74}k_{58}k_{34} \oplus k_{73}k_{58}k_{34} \oplus k_{73}k_{72}k_{58}k_{34} \oplus k_{72}k_{71}k_{58}k_{34} \oplus \\
& k_{64}k_{58}k_{34} \oplus k_{79}k_{64}k_{58}k_{34} \oplus k_{78}k_{77}k_{64}k_{58}k_{34} \oplus k_{75}k_{64}k_{58}k_{34} \oplus \\
& k_{74}k_{73}k_{64}k_{58}k_{34} \oplus k_{60}k_{58}k_{34} \oplus k_{78}k_{59}k_{58}k_{34} \oplus k_{77}k_{76}k_{59}k_{58}k_{34} \oplus \\
& k_{74}k_{59}k_{58}k_{34} \oplus k_{73}k_{59}k_{58}k_{34} \oplus k_{73}k_{72}k_{59}k_{58}k_{34} \oplus k_{72}k_{71}k_{59}k_{58}k_{34} \oplus \\
& k_{64}k_{59}k_{58}k_{34} \oplus k_{75}k_{57}k_{34} \oplus k_{74}k_{57}k_{34} \oplus k_{74}k_{73}k_{57}k_{34} \oplus k_{73}k_{72}k_{57}k_{34} \oplus \\
& k_{64}k_{57}k_{34} \oplus k_{60}k_{57}k_{34} \oplus k_{58}k_{57}k_{34} \oplus k_{59}k_{58}k_{57}k_{34} \oplus k_{78}k_{56}k_{34} \oplus \\
& k_{77}k_{76}k_{56}k_{34} \oplus k_{73}k_{56}k_{34} \oplus k_{78}k_{73}k_{56}k_{34} \oplus k_{77}k_{76}k_{73}k_{56}k_{34} \oplus \\
& k_{72}k_{71}k_{56}k_{34} \oplus k_{78}k_{72}k_{71}k_{56}k_{34} \oplus k_{77}k_{76}k_{72}k_{71}k_{56}k_{34} \oplus k_{64}k_{56}k_{34} \oplus \\
& k_{73}k_{64}k_{56}k_{34} \oplus k_{72}k_{71}k_{64}k_{56}k_{34} \oplus k_{60}k_{56}k_{34} \oplus k_{78}k_{60}k_{56}k_{34} \oplus \\
& k_{77}k_{76}k_{60}k_{56}k_{34} \oplus k_{64}k_{60}k_{56}k_{34} \oplus k_{59}k_{58}k_{56}k_{34} \oplus k_{78}k_{59}k_{58}k_{56}k_{34} \oplus \\
& k_{77}k_{76}k_{59}k_{58}k_{56}k_{34} \oplus k_{64}k_{59}k_{58}k_{56}k_{34} \oplus k_{57}k_{56}k_{34} \oplus k_{72}k_{55}k_{34} \oplus \\
& k_{71}k_{55}k_{34} \oplus k_{71}k_{70}k_{55}k_{34} \oplus k_{70}k_{69}k_{55}k_{34} \oplus k_{62}k_{55}k_{34} \oplus k_{61}k_{60}k_{55}k_{34} \oplus \\
& k_{54}k_{34} \oplus k_{73}k_{54}k_{34} \oplus k_{72}k_{71}k_{54}k_{34} \oplus k_{53}k_{34} \oplus k_{78}k_{53}k_{34} \oplus k_{77}k_{76}k_{53}k_{34} \oplus \\
& k_{73}k_{53}k_{34} \oplus k_{72}k_{71}k_{53}k_{34} \oplus k_{64}k_{52}k_{34} \oplus k_{64}k_{58}k_{52}k_{34} \oplus k_{79}k_{78}k_{51}k_{34} \oplus \\
& k_{76}k_{51}k_{34} \oplus k_{75}k_{74}k_{51}k_{34} \oplus k_{76}k_{73}k_{51}k_{34} \oplus k_{75}k_{74}k_{73}k_{51}k_{34} \oplus \\
& k_{76}k_{72}k_{71}k_{51}k_{34} \oplus k_{75}k_{74}k_{72}k_{71}k_{51}k_{34} \oplus k_{60}k_{51}k_{34} \oplus k_{58}k_{51}k_{34} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{59}k_{58}k_{51}k_{34} \oplus k_{56}k_{51}k_{34} \oplus k_{73}k_{56}k_{51}k_{34} \oplus k_{72}k_{71}k_{56}k_{51}k_{34} \oplus \\
& k_{60}k_{56}k_{51}k_{34} \oplus k_{59}k_{58}k_{56}k_{51}k_{34} \oplus k_{53}k_{51}k_{34} \oplus k_{50}k_{34} \oplus k_{73}k_{50}k_{34} \oplus \\
& k_{72}k_{71}k_{50}k_{34} \oplus k_{75}k_{60}k_{50}k_{34} \oplus k_{74}k_{73}k_{60}k_{50}k_{34} \oplus k_{49}k_{34} \oplus \\
& k_{79}k_{78}k_{77}k_{76}k_{49}k_{34} \oplus k_{75}k_{49}k_{34} \oplus k_{78}k_{73}k_{49}k_{34} \oplus k_{77}k_{76}k_{73}k_{49}k_{34} \oplus \\
& k_{75}k_{73}k_{49}k_{34} \oplus k_{78}k_{72}k_{71}k_{49}k_{34} \oplus k_{77}k_{76}k_{72}k_{71}k_{49}k_{34} \oplus k_{75}k_{72}k_{71}k_{49}k_{34} \oplus \\
& k_{74}k_{73}k_{72}k_{71}k_{49}k_{34} \oplus k_{57}k_{49}k_{34} \oplus k_{53}k_{49}k_{34} \oplus k_{78}k_{53}k_{49}k_{34} \oplus \\
& k_{77}k_{76}k_{53}k_{49}k_{34} \oplus k_{79}k_{78}k_{51}k_{49}k_{34} \oplus k_{73}k_{51}k_{49}k_{34} \oplus k_{72}k_{71}k_{51}k_{49}k_{34} \oplus \\
& k_{53}k_{51}k_{49}k_{34} \oplus k_{48}k_{34} \oplus k_{76}k_{48}k_{34} \oplus k_{75}k_{74}k_{48}k_{34} \oplus k_{76}k_{73}k_{48}k_{34} \oplus \\
& k_{75}k_{74}k_{73}k_{48}k_{34} \oplus k_{76}k_{72}k_{71}k_{48}k_{34} \oplus k_{75}k_{74}k_{72}k_{71}k_{48}k_{34} \oplus k_{67}k_{48}k_{34} \oplus \\
& k_{66}k_{65}k_{48}k_{34} \oplus k_{64}k_{48}k_{34} \oplus k_{62}k_{48}k_{34} \oplus k_{74}k_{62}k_{48}k_{34} \oplus k_{73}k_{72}k_{62}k_{48}k_{34} \oplus \\
& k_{60}k_{48}k_{34} \oplus k_{64}k_{58}k_{48}k_{34} \oplus k_{57}k_{48}k_{34} \oplus k_{60}k_{50}k_{48}k_{34} \oplus k_{49}k_{48}k_{34} \oplus \\
& k_{73}k_{49}k_{48}k_{34} \oplus k_{72}k_{71}k_{49}k_{48}k_{34} \oplus k_{60}k_{49}k_{48}k_{34} \oplus k_{75}k_{60}k_{49}k_{48}k_{34} \oplus \\
& k_{74}k_{73}k_{60}k_{49}k_{48}k_{34} \oplus k_{75}k_{47}k_{34} \oplus k_{73}k_{47}k_{34} \oplus k_{74}k_{73}k_{47}k_{34} \oplus \\
& k_{72}k_{71}k_{47}k_{34} \oplus k_{75}k_{62}k_{47}k_{34} \oplus k_{74}k_{73}k_{62}k_{47}k_{34} \oplus k_{60}k_{47}k_{34} \oplus k_{58}k_{47}k_{34} \oplus \\
& k_{59}k_{58}k_{47}k_{34} \oplus k_{57}k_{47}k_{34} \oplus k_{48}k_{47}k_{34} \oplus k_{78}k_{48}k_{47}k_{34} \oplus k_{77}k_{76}k_{48}k_{47}k_{34} \oplus \\
& k_{79}k_{78}k_{77}k_{76}k_{48}k_{47}k_{34} \oplus k_{62}k_{48}k_{47}k_{34} \oplus k_{57}k_{48}k_{47}k_{34} \oplus k_{53}k_{48}k_{47}k_{34} \oplus \\
& k_{78}k_{53}k_{48}k_{47}k_{34} \oplus k_{77}k_{76}k_{53}k_{48}k_{47}k_{34} \oplus k_{51}k_{48}k_{47}k_{34} \oplus \\
& k_{79}k_{78}k_{51}k_{48}k_{47}k_{34} \oplus k_{53}k_{51}k_{48}k_{47}k_{34} \oplus k_{46}k_{34} \oplus k_{79}k_{78}k_{46}k_{34} \oplus \\
& k_{77}k_{46}k_{34} \oplus k_{78}k_{76}k_{46}k_{34} \oplus k_{77}k_{76}k_{46}k_{34} \oplus k_{75}k_{46}k_{34} \oplus k_{74}k_{46}k_{34} \oplus \\
& k_{75}k_{74}k_{46}k_{34} \oplus k_{78}k_{75}k_{74}k_{46}k_{34} \oplus k_{77}k_{76}k_{75}k_{74}k_{46}k_{34} \oplus k_{74}k_{73}k_{46}k_{34} \oplus \\
& k_{76}k_{74}k_{73}k_{46}k_{34} \oplus k_{75}k_{74}k_{73}k_{46}k_{34} \oplus k_{73}k_{72}k_{46}k_{34} \oplus k_{64}k_{46}k_{34} \oplus \\
& k_{62}k_{46}k_{34} \oplus k_{60}k_{46}k_{34} \oplus k_{61}k_{60}k_{46}k_{34} \oplus k_{58}k_{46}k_{34} \oplus k_{59}k_{58}k_{46}k_{34} \oplus \\
& k_{56}k_{46}k_{34} \oplus k_{78}k_{56}k_{46}k_{34} \oplus k_{77}k_{76}k_{56}k_{46}k_{34} \oplus k_{64}k_{56}k_{46}k_{34} \oplus k_{54}k_{46}k_{34} \oplus \\
& k_{53}k_{46}k_{34} \oplus k_{76}k_{51}k_{46}k_{34} \oplus k_{75}k_{74}k_{51}k_{46}k_{34} \oplus k_{56}k_{51}k_{46}k_{34} \oplus k_{50}k_{46}k_{34} \oplus \\
& k_{78}k_{49}k_{46}k_{34} \oplus k_{77}k_{76}k_{49}k_{46}k_{34} \oplus k_{75}k_{49}k_{46}k_{34} \oplus k_{74}k_{73}k_{49}k_{46}k_{34} \oplus \\
& k_{51}k_{49}k_{46}k_{34} \oplus k_{76}k_{48}k_{46}k_{34} \oplus k_{75}k_{74}k_{48}k_{46}k_{34} \oplus k_{49}k_{48}k_{46}k_{34} \oplus \\
& k_{47}k_{46}k_{34} \oplus k_{74}k_{47}k_{46}k_{34} \oplus k_{73}k_{47}k_{46}k_{34} \oplus k_{73}k_{72}k_{47}k_{46}k_{34} \oplus \\
& k_{72}k_{71}k_{47}k_{46}k_{34} \oplus k_{67}k_{47}k_{46}k_{34} \oplus k_{66}k_{65}k_{47}k_{46}k_{34} \oplus k_{71}k_{45}k_{34} \oplus \\
& k_{70}k_{69}k_{45}k_{34} \oplus k_{55}k_{45}k_{34} \oplus k_{72}k_{44}k_{34} \oplus k_{71}k_{70}k_{44}k_{34} \oplus k_{55}k_{44}k_{34} \oplus \\
& k_{43}k_{34} \oplus k_{41}k_{34} \oplus k_{73}k_{41}k_{34} \oplus k_{72}k_{71}k_{41}k_{34} \oplus k_{46}k_{41}k_{34} \oplus k_{48}k_{40}k_{34} \oplus \\
& k_{47}k_{46}k_{40}k_{34} \oplus k_{77}k_{35}k_{34} \oplus k_{76}k_{75}k_{35}k_{34} \oplus k_{74}k_{35}k_{34} \oplus k_{73}k_{35}k_{34} \oplus \\
& k_{73}k_{72}k_{35}k_{34} \oplus k_{72}k_{71}k_{35}k_{34} \oplus k_{67}k_{35}k_{34} \oplus k_{66}k_{35}k_{34} \oplus k_{66}k_{65}k_{35}k_{34} \oplus \\
& k_{67}k_{64}k_{35}k_{34} \oplus k_{66}k_{65}k_{64}k_{35}k_{34} \oplus k_{62}k_{35}k_{34} \oplus k_{57}k_{35}k_{34} \oplus k_{55}k_{35}k_{34} \oplus \\
& k_{66}k_{54}k_{35}k_{34} \oplus k_{50}k_{35}k_{34} \oplus k_{47}k_{35}k_{34} \oplus k_{46}k_{35}k_{34} \oplus k_{40}k_{35}k_{34} \oplus \\
& k_{64}k_{40}k_{35}k_{34} \oplus k_{33} \oplus k_{79}k_{33} \oplus k_{78}k_{33} \oplus k_{78}k_{77}k_{33} \oplus k_{76}k_{33} \oplus k_{78}k_{76}k_{33} \oplus \\
& k_{77}k_{76}k_{33} \oplus k_{78}k_{75}k_{74}k_{33} \oplus k_{77}k_{75}k_{74}k_{33} \oplus k_{76}k_{75}k_{74}k_{33} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{77}k_{76}k_{75}k_{74}k_{33} \oplus k_{73}k_{33} \oplus k_{78}k_{73}k_{33} \oplus k_{79}k_{78}k_{73}k_{33} \oplus k_{77}k_{76}k_{73}k_{33} \oplus \\
& k_{74}k_{73}k_{33} \oplus k_{76}k_{74}k_{73}k_{33} \oplus k_{75}k_{74}k_{73}k_{33} \oplus k_{71}k_{33} \oplus k_{78}k_{72}k_{71}k_{33} \oplus \\
& k_{79}k_{78}k_{72}k_{71}k_{33} \oplus k_{77}k_{76}k_{72}k_{71}k_{33} \oplus k_{74}k_{72}k_{71}k_{33} \oplus k_{73}k_{72}k_{71}k_{33} \oplus \\
& k_{73}k_{71}k_{70}k_{33} \oplus k_{72}k_{71}k_{70}k_{33} \oplus k_{70}k_{69}k_{33} \oplus k_{68}k_{33} \oplus k_{66}k_{33} \oplus k_{64}k_{33} \oplus \\
& k_{79}k_{64}k_{33} \oplus k_{78}k_{77}k_{64}k_{33} \oplus k_{75}k_{64}k_{33} \oplus k_{73}k_{64}k_{33} \oplus k_{74}k_{73}k_{64}k_{33} \oplus \\
& k_{72}k_{71}k_{64}k_{33} \oplus k_{63}k_{33} \oplus k_{62}k_{33} \oplus k_{61}k_{33} \oplus k_{78}k_{61}k_{33} \oplus k_{77}k_{76}k_{61}k_{33} \oplus \\
& k_{74}k_{61}k_{33} \oplus k_{73}k_{61}k_{33} \oplus k_{73}k_{72}k_{61}k_{33} \oplus k_{72}k_{71}k_{61}k_{33} \oplus k_{64}k_{61}k_{33} \oplus \\
& k_{62}k_{61}k_{33} \oplus k_{61}k_{60}k_{33} \oplus k_{59}k_{33} \oplus k_{78}k_{59}k_{33} \oplus k_{77}k_{76}k_{59}k_{33} \oplus k_{74}k_{59}k_{33} \oplus \\
& k_{73}k_{59}k_{33} \oplus k_{73}k_{72}k_{59}k_{33} \oplus k_{71}k_{59}k_{33} \oplus k_{72}k_{71}k_{59}k_{33} \oplus k_{70}k_{69}k_{59}k_{33} \oplus \\
& k_{66}k_{59}k_{33} \oplus k_{79}k_{64}k_{59}k_{33} \oplus k_{78}k_{77}k_{64}k_{59}k_{33} \oplus k_{75}k_{64}k_{59}k_{33} \oplus \\
& k_{74}k_{73}k_{64}k_{59}k_{33} \oplus k_{60}k_{59}k_{33} \oplus k_{78}k_{60}k_{59}k_{33} \oplus k_{77}k_{76}k_{60}k_{59}k_{33} \oplus \\
& k_{74}k_{60}k_{59}k_{33} \oplus k_{73}k_{60}k_{59}k_{33} \oplus k_{73}k_{72}k_{60}k_{59}k_{33} \oplus k_{72}k_{71}k_{60}k_{59}k_{33} \oplus \\
& k_{64}k_{60}k_{59}k_{33} \oplus k_{58}k_{33} \oplus k_{77}k_{76}k_{58}k_{33} \oplus k_{74}k_{58}k_{33} \oplus k_{75}k_{74}k_{58}k_{33} \oplus \\
& k_{77}k_{75}k_{74}k_{58}k_{33} \oplus k_{76}k_{75}k_{74}k_{58}k_{33} \oplus k_{73}k_{58}k_{33} \oplus k_{76}k_{74}k_{73}k_{58}k_{33} \oplus \\
& k_{75}k_{74}k_{73}k_{58}k_{33} \oplus k_{72}k_{58}k_{33} \oplus k_{73}k_{72}k_{58}k_{33} \oplus k_{72}k_{71}k_{58}k_{33} \oplus \\
& k_{71}k_{70}k_{58}k_{33} \oplus k_{64}k_{58}k_{33} \oplus k_{79}k_{64}k_{58}k_{33} \oplus k_{78}k_{77}k_{64}k_{58}k_{33} \oplus \\
& k_{75}k_{64}k_{58}k_{33} \oplus k_{74}k_{73}k_{64}k_{58}k_{33} \oplus k_{63}k_{58}k_{33} \oplus k_{61}k_{58}k_{33} \oplus k_{62}k_{61}k_{58}k_{33} \oplus \\
& k_{59}k_{58}k_{33} \oplus k_{78}k_{59}k_{58}k_{33} \oplus k_{77}k_{76}k_{59}k_{58}k_{33} \oplus k_{74}k_{59}k_{58}k_{33} \oplus \\
& k_{73}k_{59}k_{58}k_{33} \oplus k_{73}k_{72}k_{59}k_{58}k_{33} \oplus k_{72}k_{71}k_{59}k_{58}k_{33} \oplus k_{64}k_{59}k_{58}k_{33} \oplus \\
& k_{79}k_{64}k_{59}k_{58}k_{33} \oplus k_{78}k_{77}k_{64}k_{59}k_{58}k_{33} \oplus k_{75}k_{64}k_{59}k_{58}k_{33} \oplus \\
& k_{74}k_{73}k_{64}k_{59}k_{58}k_{33} \oplus k_{60}k_{59}k_{58}k_{33} \oplus k_{75}k_{57}k_{33} \oplus k_{74}k_{57}k_{33} \oplus \\
& k_{74}k_{73}k_{57}k_{33} \oplus k_{73}k_{72}k_{57}k_{33} \oplus k_{61}k_{57}k_{33} \oplus k_{59}k_{57}k_{33} \oplus k_{60}k_{59}k_{57}k_{33} \oplus \\
& k_{58}k_{57}k_{33} \oplus k_{71}k_{58}k_{57}k_{33} \oplus k_{70}k_{69}k_{58}k_{57}k_{33} \oplus k_{66}k_{58}k_{57}k_{33} \oplus \\
& k_{64}k_{58}k_{57}k_{33} \oplus k_{59}k_{58}k_{57}k_{33} \oplus k_{56}k_{33} \oplus k_{78}k_{56}k_{33} \oplus k_{77}k_{76}k_{56}k_{33} \oplus \\
& k_{74}k_{56}k_{33} \oplus k_{78}k_{73}k_{56}k_{33} \oplus k_{77}k_{76}k_{73}k_{56}k_{33} \oplus k_{72}k_{56}k_{33} \oplus k_{73}k_{72}k_{56}k_{33} \oplus \\
& k_{78}k_{72}k_{71}k_{56}k_{33} \oplus k_{77}k_{76}k_{72}k_{71}k_{56}k_{33} \oplus k_{71}k_{70}k_{56}k_{33} \oplus k_{64}k_{56}k_{33} \oplus \\
& k_{73}k_{64}k_{56}k_{33} \oplus k_{72}k_{71}k_{64}k_{56}k_{33} \oplus k_{61}k_{56}k_{33} \oplus k_{78}k_{61}k_{56}k_{33} \oplus \\
& k_{77}k_{76}k_{61}k_{56}k_{33} \oplus k_{64}k_{61}k_{56}k_{33} \oplus k_{59}k_{56}k_{33} \oplus k_{60}k_{59}k_{56}k_{33} \oplus \\
& k_{78}k_{60}k_{59}k_{56}k_{33} \oplus k_{77}k_{76}k_{60}k_{59}k_{56}k_{33} \oplus k_{64}k_{60}k_{59}k_{56}k_{33} \oplus k_{58}k_{57}k_{56}k_{33} \oplus \\
& k_{54}k_{33} \oplus k_{73}k_{53}k_{33} \oplus k_{72}k_{71}k_{53}k_{33} \oplus k_{52}k_{33} \oplus k_{64}k_{52}k_{33} \oplus k_{64}k_{59}k_{52}k_{33} \oplus \\
& k_{64}k_{58}k_{52}k_{33} \oplus k_{64}k_{59}k_{58}k_{52}k_{33} \oplus k_{51}k_{33} \oplus k_{76}k_{51}k_{33} \oplus k_{75}k_{74}k_{51}k_{33} \oplus \\
& k_{73}k_{51}k_{33} \oplus k_{72}k_{71}k_{51}k_{33} \oplus k_{61}k_{51}k_{33} \oplus k_{59}k_{51}k_{33} \oplus k_{60}k_{59}k_{51}k_{33} \oplus \\
& k_{59}k_{58}k_{51}k_{33} \oplus k_{56}k_{51}k_{33} \oplus k_{73}k_{56}k_{51}k_{33} \oplus k_{72}k_{71}k_{56}k_{51}k_{33} \oplus \\
& k_{61}k_{56}k_{51}k_{33} \oplus k_{60}k_{59}k_{56}k_{51}k_{33} \oplus k_{76}k_{50}k_{33} \oplus k_{75}k_{74}k_{50}k_{33} \oplus \\
& k_{76}k_{58}k_{50}k_{33} \oplus k_{75}k_{74}k_{58}k_{50}k_{33} \oplus k_{49}k_{33} \oplus k_{78}k_{49}k_{33} \oplus k_{77}k_{49}k_{33} \oplus \\
& k_{77}k_{76}k_{49}k_{33} \oplus k_{75}k_{49}k_{33} \oplus k_{76}k_{75}k_{49}k_{33} \oplus k_{74}k_{73}k_{49}k_{33} \oplus k_{77}k_{58}k_{49}k_{33} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{75}k_{58}k_{49}k_{33} \oplus k_{76}k_{75}k_{58}k_{49}k_{33} \oplus k_{74}k_{73}k_{58}k_{49}k_{33} \oplus k_{57}k_{49}k_{33} \oplus \\
& k_{51}k_{49}k_{33} \oplus k_{50}k_{49}k_{33} \oplus k_{58}k_{50}k_{49}k_{33} \oplus k_{48}k_{33} \oplus k_{76}k_{48}k_{33} \oplus k_{74}k_{48}k_{33} \oplus \\
& k_{75}k_{74}k_{48}k_{33} \oplus k_{73}k_{48}k_{33} \oplus k_{72}k_{48}k_{33} \oplus k_{73}k_{72}k_{48}k_{33} \oplus k_{72}k_{71}k_{48}k_{33} \oplus \\
& k_{71}k_{70}k_{48}k_{33} \oplus k_{64}k_{48}k_{33} \oplus k_{64}k_{59}k_{48}k_{33} \oplus k_{76}k_{58}k_{48}k_{33} \oplus \\
& k_{75}k_{74}k_{58}k_{48}k_{33} \oplus k_{72}k_{58}k_{48}k_{33} \oplus k_{71}k_{70}k_{58}k_{48}k_{33} \oplus k_{64}k_{58}k_{48}k_{33} \oplus \\
& k_{64}k_{59}k_{58}k_{48}k_{33} \oplus k_{57}k_{48}k_{33} \oplus k_{49}k_{48}k_{33} \oplus k_{58}k_{49}k_{48}k_{33} \oplus k_{47}k_{33} \oplus \\
& k_{73}k_{47}k_{33} \oplus k_{72}k_{47}k_{33} \oplus k_{72}k_{71}k_{47}k_{33} \oplus k_{71}k_{70}k_{47}k_{33} \oplus k_{64}k_{47}k_{33} \oplus \\
& k_{75}k_{64}k_{47}k_{33} \oplus k_{74}k_{73}k_{64}k_{47}k_{33} \oplus k_{61}k_{47}k_{33} \oplus k_{59}k_{47}k_{33} \oplus k_{60}k_{59}k_{47}k_{33} \oplus \\
& k_{72}k_{58}k_{47}k_{33} \oplus k_{71}k_{70}k_{58}k_{47}k_{33} \oplus k_{64}k_{58}k_{47}k_{33} \oplus k_{75}k_{64}k_{58}k_{47}k_{33} \oplus \\
& k_{74}k_{73}k_{64}k_{58}k_{47}k_{33} \oplus k_{59}k_{58}k_{47}k_{33} \oplus k_{57}k_{47}k_{33} \oplus k_{56}k_{47}k_{33} \oplus k_{48}k_{47}k_{33} \oplus \\
& k_{64}k_{48}k_{47}k_{33} \oplus k_{64}k_{58}k_{48}k_{47}k_{33} \oplus k_{57}k_{48}k_{47}k_{33} \oplus k_{46}k_{33} \oplus k_{78}k_{46}k_{33} \oplus \\
& k_{79}k_{78}k_{46}k_{33} \oplus k_{77}k_{76}k_{46}k_{33} \oplus k_{74}k_{46}k_{33} \oplus k_{72}k_{46}k_{33} \oplus k_{73}k_{72}k_{46}k_{33} \oplus \\
& k_{71}k_{70}k_{46}k_{33} \oplus k_{64}k_{46}k_{33} \oplus k_{61}k_{46}k_{33} \oplus k_{59}k_{46}k_{33} \oplus k_{60}k_{59}k_{46}k_{33} \oplus \\
& k_{59}k_{58}k_{46}k_{33} \oplus k_{78}k_{56}k_{46}k_{33} \oplus k_{77}k_{76}k_{56}k_{46}k_{33} \oplus k_{64}k_{56}k_{46}k_{33} \oplus \\
& k_{53}k_{46}k_{33} \oplus k_{51}k_{46}k_{33} \oplus k_{56}k_{51}k_{46}k_{33} \oplus k_{48}k_{46}k_{33} \oplus k_{74}k_{47}k_{46}k_{33} \oplus \\
& k_{73}k_{47}k_{46}k_{33} \oplus k_{72}k_{47}k_{46}k_{33} \oplus k_{73}k_{72}k_{47}k_{46}k_{33} \oplus k_{72}k_{71}k_{47}k_{46}k_{33} \oplus \\
& k_{71}k_{70}k_{47}k_{46}k_{33} \oplus k_{72}k_{58}k_{47}k_{46}k_{33} \oplus k_{71}k_{70}k_{58}k_{47}k_{46}k_{33} \oplus k_{73}k_{45}k_{33} \oplus \\
& k_{72}k_{71}k_{45}k_{33} \oplus k_{58}k_{45}k_{33} \oplus k_{56}k_{45}k_{33} \oplus k_{48}k_{45}k_{33} \oplus k_{58}k_{48}k_{45}k_{33} \oplus \\
& k_{47}k_{45}k_{33} \oplus k_{58}k_{47}k_{45}k_{33} \oplus k_{46}k_{45}k_{33} \oplus k_{72}k_{46}k_{45}k_{33} \oplus k_{71}k_{70}k_{46}k_{45}k_{33} \oplus \\
& k_{64}k_{46}k_{45}k_{33} \oplus k_{75}k_{64}k_{46}k_{45}k_{33} \oplus k_{74}k_{73}k_{64}k_{46}k_{45}k_{33} \oplus k_{72}k_{58}k_{46}k_{45}k_{33} \oplus \\
& k_{71}k_{70}k_{58}k_{46}k_{45}k_{33} \oplus k_{64}k_{58}k_{46}k_{45}k_{33} \oplus k_{75}k_{64}k_{58}k_{46}k_{45}k_{33} \oplus \\
& k_{74}k_{73}k_{64}k_{58}k_{46}k_{45}k_{33} \oplus k_{64}k_{48}k_{46}k_{45}k_{33} \oplus k_{64}k_{58}k_{48}k_{46}k_{45}k_{33} \oplus \\
& k_{47}k_{46}k_{45}k_{33} \oplus k_{58}k_{47}k_{46}k_{45}k_{33} \oplus k_{44}k_{33} \oplus k_{59}k_{44}k_{33} \oplus k_{58}k_{57}k_{44}k_{33} \oplus \\
& k_{58}k_{45}k_{44}k_{33} \oplus k_{42}k_{33} \oplus k_{58}k_{42}k_{33} \oplus k_{41}k_{33} \oplus k_{40}k_{33} \oplus k_{58}k_{40}k_{33} \oplus \\
& k_{36}k_{33} \oplus k_{58}k_{36}k_{33} \oplus k_{35}k_{33} \oplus k_{34}k_{33} \oplus k_{78}k_{34}k_{33} \oplus k_{77}k_{76}k_{34}k_{33} \oplus \\
& k_{74}k_{34}k_{33} \oplus k_{73}k_{34}k_{33} \oplus k_{73}k_{72}k_{34}k_{33} \oplus k_{72}k_{71}k_{34}k_{33} \oplus k_{64}k_{34}k_{33} \oplus \\
& k_{58}k_{34}k_{33} \oplus k_{57}k_{34}k_{33} \oplus k_{78}k_{56}k_{34}k_{33} \oplus k_{77}k_{76}k_{56}k_{34}k_{33} \oplus k_{64}k_{56}k_{34}k_{33} \oplus \\
& k_{51}k_{34}k_{33} \oplus k_{56}k_{51}k_{34}k_{33} \oplus k_{47}k_{34}k_{33} \oplus k_{46}k_{34}k_{33} \oplus k_{77}k_{76}k_{32} \oplus \\
& k_{76}k_{75}k_{32} \oplus k_{77}k_{75}k_{74}k_{32} \oplus k_{76}k_{75}k_{74}k_{32} \oplus k_{72}k_{32} \oplus k_{71}k_{32} \oplus k_{71}k_{70}k_{32} \oplus \\
& k_{70}k_{69}k_{32} \oplus k_{66}k_{32} \oplus k_{64}k_{32} \oplus k_{79}k_{64}k_{32} \oplus k_{78}k_{77}k_{64}k_{32} \oplus k_{73}k_{64}k_{32} \oplus \\
& k_{72}k_{71}k_{64}k_{32} \oplus k_{63}k_{32} \oplus k_{62}k_{32} \oplus k_{61}k_{32} \oplus k_{62}k_{61}k_{32} \oplus k_{60}k_{32} \oplus \\
& k_{78}k_{60}k_{32} \oplus k_{77}k_{76}k_{60}k_{32} \oplus k_{74}k_{60}k_{32} \oplus k_{73}k_{60}k_{32} \oplus k_{73}k_{72}k_{60}k_{32} \oplus \\
& k_{71}k_{60}k_{32} \oplus k_{72}k_{71}k_{60}k_{32} \oplus k_{70}k_{69}k_{60}k_{32} \oplus k_{66}k_{60}k_{32} \oplus k_{79}k_{64}k_{60}k_{32} \oplus \\
& k_{78}k_{77}k_{64}k_{60}k_{32} \oplus k_{75}k_{64}k_{60}k_{32} \oplus k_{74}k_{73}k_{64}k_{60}k_{32} \oplus k_{61}k_{60}k_{32} \oplus \\
& k_{60}k_{59}k_{32} \oplus k_{58}k_{32} \oplus k_{78}k_{58}k_{32} \oplus k_{77}k_{76}k_{58}k_{32} \oplus k_{74}k_{58}k_{32} \oplus k_{73}k_{58}k_{32} \oplus \\
& k_{72}k_{58}k_{32} \oplus k_{73}k_{72}k_{58}k_{32} \oplus k_{72}k_{71}k_{58}k_{32} \oplus k_{71}k_{70}k_{58}k_{32} \oplus k_{64}k_{58}k_{32} \oplus
\end{aligned}$$



$$\begin{aligned}
& k_{79}k_{64}k_{58}k_{32} \oplus k_{78}k_{77}k_{64}k_{58}k_{32} \oplus k_{75}k_{64}k_{58}k_{32} \oplus k_{74}k_{73}k_{64}k_{58}k_{32} \oplus \\
& k_{60}k_{58}k_{32} \oplus k_{78}k_{60}k_{58}k_{32} \oplus k_{77}k_{76}k_{60}k_{58}k_{32} \oplus k_{74}k_{60}k_{58}k_{32} \oplus \\
& k_{73}k_{60}k_{58}k_{32} \oplus k_{73}k_{72}k_{60}k_{58}k_{32} \oplus k_{72}k_{71}k_{60}k_{58}k_{32} \oplus k_{64}k_{60}k_{58}k_{32} \oplus \\
& k_{79}k_{64}k_{60}k_{58}k_{32} \oplus k_{78}k_{77}k_{64}k_{60}k_{58}k_{32} \oplus k_{75}k_{64}k_{60}k_{58}k_{32} \oplus \\
& k_{74}k_{73}k_{64}k_{60}k_{58}k_{32} \oplus k_{59}k_{58}k_{32} \oplus k_{71}k_{59}k_{58}k_{32} \oplus k_{70}k_{69}k_{59}k_{58}k_{32} \oplus \\
& k_{66}k_{59}k_{58}k_{32} \oplus k_{64}k_{59}k_{58}k_{32} \oplus k_{57}k_{32} \oplus k_{60}k_{57}k_{32} \oplus k_{58}k_{57}k_{32} \oplus \\
& k_{60}k_{58}k_{57}k_{32} \oplus k_{77}k_{56}k_{32} \oplus k_{76}k_{75}k_{56}k_{32} \oplus k_{60}k_{56}k_{32} \oplus k_{59}k_{58}k_{56}k_{32} \oplus \\
& k_{55}k_{32} \oplus k_{64}k_{52}k_{32} \oplus k_{64}k_{60}k_{52}k_{32} \oplus k_{64}k_{58}k_{52}k_{32} \oplus k_{64}k_{60}k_{58}k_{52}k_{32} \oplus \\
& k_{60}k_{51}k_{32} \oplus k_{58}k_{51}k_{32} \oplus k_{60}k_{58}k_{51}k_{32} \oplus k_{76}k_{50}k_{32} \oplus k_{75}k_{74}k_{50}k_{32} \oplus \\
& k_{56}k_{50}k_{32} \oplus k_{49}k_{32} \oplus k_{77}k_{49}k_{32} \oplus k_{76}k_{75}k_{49}k_{32} \oplus k_{56}k_{49}k_{32} \oplus k_{50}k_{49}k_{32} \oplus \\
& k_{72}k_{48}k_{32} \oplus k_{71}k_{70}k_{48}k_{32} \oplus k_{64}k_{60}k_{48}k_{32} \oplus k_{72}k_{58}k_{48}k_{32} \oplus \\
& k_{71}k_{70}k_{58}k_{48}k_{32} \oplus k_{64}k_{58}k_{48}k_{32} \oplus k_{64}k_{60}k_{58}k_{48}k_{32} \oplus k_{47}k_{32} \oplus k_{72}k_{47}k_{32} \oplus \\
& k_{71}k_{70}k_{47}k_{32} \oplus k_{64}k_{47}k_{32} \oplus k_{75}k_{64}k_{47}k_{32} \oplus k_{74}k_{73}k_{64}k_{47}k_{32} \oplus k_{60}k_{47}k_{32} \oplus \\
& k_{58}k_{47}k_{32} \oplus k_{72}k_{58}k_{47}k_{32} \oplus k_{71}k_{70}k_{58}k_{47}k_{32} \oplus k_{64}k_{58}k_{47}k_{32} \oplus \\
& k_{75}k_{64}k_{58}k_{47}k_{32} \oplus k_{74}k_{73}k_{64}k_{58}k_{47}k_{32} \oplus k_{60}k_{58}k_{47}k_{32} \oplus k_{48}k_{47}k_{32} \oplus \\
& k_{64}k_{48}k_{47}k_{32} \oplus k_{64}k_{58}k_{48}k_{47}k_{32} \oplus k_{56}k_{48}k_{47}k_{32} \oplus k_{64}k_{46}k_{32} \oplus k_{60}k_{46}k_{32} \oplus \\
& k_{58}k_{46}k_{32} \oplus k_{60}k_{58}k_{46}k_{32} \oplus k_{72}k_{47}k_{46}k_{32} \oplus k_{71}k_{70}k_{47}k_{46}k_{32} \oplus \\
& k_{72}k_{58}k_{47}k_{46}k_{32} \oplus k_{71}k_{70}k_{58}k_{47}k_{46}k_{32} \oplus k_{45}k_{32} \oplus k_{58}k_{45}k_{32} \oplus k_{48}k_{45}k_{32} \oplus \\
& k_{58}k_{48}k_{45}k_{32} \oplus k_{47}k_{45}k_{32} \oplus k_{58}k_{47}k_{45}k_{32} \oplus k_{72}k_{46}k_{45}k_{32} \oplus \\
& k_{71}k_{70}k_{46}k_{45}k_{32} \oplus k_{64}k_{46}k_{45}k_{32} \oplus k_{75}k_{64}k_{46}k_{45}k_{32} \oplus k_{74}k_{73}k_{64}k_{46}k_{45}k_{32} \oplus \\
& k_{58}k_{46}k_{45}k_{32} \oplus k_{72}k_{58}k_{46}k_{45}k_{32} \oplus k_{71}k_{70}k_{58}k_{46}k_{45}k_{32} \oplus k_{64}k_{58}k_{46}k_{45}k_{32} \oplus \\
& k_{75}k_{64}k_{58}k_{46}k_{45}k_{32} \oplus k_{74}k_{73}k_{64}k_{58}k_{46}k_{45}k_{32} \oplus k_{64}k_{48}k_{46}k_{45}k_{32} \oplus \\
& k_{64}k_{58}k_{48}k_{46}k_{45}k_{32} \oplus k_{47}k_{46}k_{45}k_{32} \oplus k_{58}k_{47}k_{46}k_{45}k_{32} \oplus k_{44}k_{32} \oplus \\
& k_{60}k_{44}k_{32} \oplus k_{59}k_{58}k_{44}k_{32} \oplus k_{42}k_{32} \oplus k_{36}k_{32} \oplus k_{35}k_{32} \oplus k_{34}k_{32} \oplus \\
& k_{78}k_{33}k_{32} \oplus k_{77}k_{76}k_{33}k_{32} \oplus k_{73}k_{33}k_{32} \oplus k_{71}k_{33}k_{32} \oplus k_{72}k_{71}k_{33}k_{32} \oplus \\
& k_{70}k_{33}k_{32} \oplus k_{70}k_{69}k_{33}k_{32} \oplus k_{69}k_{68}k_{33}k_{32} \oplus k_{66}k_{33}k_{32} \oplus k_{79}k_{64}k_{33}k_{32} \oplus \\
& k_{78}k_{77}k_{64}k_{33}k_{32} \oplus k_{75}k_{64}k_{33}k_{32} \oplus k_{74}k_{73}k_{64}k_{33}k_{32} \oplus k_{62}k_{33}k_{32} \oplus \\
& k_{60}k_{33}k_{32} \oplus k_{58}k_{33}k_{32} \oplus k_{78}k_{58}k_{33}k_{32} \oplus k_{77}k_{76}k_{58}k_{33}k_{32} \oplus k_{74}k_{58}k_{33}k_{32} \oplus \\
& k_{73}k_{58}k_{33}k_{32} \oplus k_{73}k_{72}k_{58}k_{33}k_{32} \oplus k_{72}k_{71}k_{58}k_{33}k_{32} \oplus k_{64}k_{58}k_{33}k_{32} \oplus \\
& k_{79}k_{64}k_{58}k_{33}k_{32} \oplus k_{78}k_{77}k_{64}k_{58}k_{33}k_{32} \oplus k_{75}k_{64}k_{58}k_{33}k_{32} \oplus \\
& k_{74}k_{73}k_{64}k_{58}k_{33}k_{32} \oplus k_{64}k_{57}k_{33}k_{32} \oplus k_{58}k_{57}k_{33}k_{32} \oplus k_{56}k_{33}k_{32} \oplus \\
& k_{64}k_{52}k_{33}k_{32} \oplus k_{64}k_{58}k_{52}k_{33}k_{32} \oplus k_{51}k_{33}k_{32} \oplus k_{58}k_{51}k_{33}k_{32} \oplus \\
& k_{64}k_{48}k_{33}k_{32} \oplus k_{64}k_{58}k_{48}k_{33}k_{32} \oplus k_{58}k_{47}k_{33}k_{32} \oplus k_{46}k_{33}k_{32} \oplus \\
& k_{58}k_{46}k_{33}k_{32} \oplus k_{44}k_{33}k_{32} \oplus k_{43}k_{33}k_{32} \oplus k_{79}k_{31} \oplus k_{78}k_{77}k_{31} \oplus \\
& k_{79}k_{78}k_{77}k_{31} \oplus k_{76}k_{31} \oplus k_{75}k_{74}k_{31} \oplus k_{68}k_{31} \oplus k_{79}k_{68}k_{31} \oplus k_{78}k_{77}k_{68}k_{31} \oplus \\
& k_{66}k_{31} \oplus k_{65}k_{64}k_{31} \oplus k_{62}k_{31} \oplus k_{61}k_{31} \oplus k_{70}k_{60}k_{31} \oplus k_{69}k_{68}k_{60}k_{31} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{60}k_{59}k_{31} \oplus k_{58}k_{31} \oplus k_{60}k_{55}k_{31} \oplus k_{54}k_{31} \oplus k_{53}k_{31} \oplus k_{79}k_{53}k_{31} \oplus \\
& k_{78}k_{77}k_{53}k_{31} \oplus k_{60}k_{54}k_{53}k_{31} \oplus k_{52}k_{31} \oplus k_{79}k_{78}k_{52}k_{31} \oplus k_{68}k_{52}k_{31} \oplus \\
& k_{53}k_{52}k_{31} \oplus k_{49}k_{31} \oplus k_{48}k_{31} \oplus k_{47}k_{31} \oplus k_{47}k_{46}k_{31} \oplus k_{45}k_{31} \oplus k_{46}k_{45}k_{31} \oplus \\
& k_{60}k_{43}k_{31} \oplus k_{39}k_{31} \oplus k_{34}k_{31} \oplus k_{58}k_{32}k_{31} \oplus k_{30} \oplus k_{78}k_{30} \oplus k_{77}k_{76}k_{30} \oplus \\
& k_{71}k_{30} \oplus k_{70}k_{69}k_{30} \oplus k_{70}k_{60}k_{30} \oplus k_{69}k_{68}k_{60}k_{30} \oplus k_{78}k_{58}k_{30} \oplus \\
& k_{77}k_{76}k_{58}k_{30} \oplus k_{72}k_{57}k_{30} \oplus k_{71}k_{70}k_{57}k_{30} \oplus k_{60}k_{55}k_{30} \oplus k_{60}k_{54}k_{53}k_{30} \oplus \\
& k_{51}k_{30} \oplus k_{58}k_{51}k_{30} \oplus k_{57}k_{45}k_{30} \oplus k_{44}k_{30} \oplus k_{60}k_{43}k_{30} \oplus k_{60}k_{42}k_{30} \oplus \\
& k_{60}k_{41}k_{40}k_{30} \oplus k_{31}k_{30} \oplus k_{58}k_{31}k_{30} \oplus k_{79}k_{78}k_{74}k_{29} \oplus k_{79}k_{78}k_{73}k_{72}k_{29} \oplus \\
& k_{71}k_{29} \oplus k_{70}k_{29} \oplus k_{70}k_{69}k_{29} \oplus k_{69}k_{68}k_{29} \oplus k_{67}k_{29} \oplus k_{66}k_{65}k_{29} \oplus \\
& k_{79}k_{78}k_{60}k_{29} \oplus k_{73}k_{60}k_{29} \oplus k_{79}k_{78}k_{73}k_{60}k_{29} \oplus k_{72}k_{71}k_{60}k_{29} \oplus \\
& k_{79}k_{78}k_{72}k_{71}k_{60}k_{29} \oplus k_{70}k_{60}k_{29} \oplus k_{69}k_{68}k_{60}k_{29} \oplus k_{65}k_{60}k_{29} \oplus k_{65}k_{58}k_{29} \oplus \\
& k_{56}k_{29} \oplus k_{55}k_{29} \oplus k_{54}k_{29} \oplus k_{79}k_{78}k_{54}k_{29} \oplus k_{74}k_{53}k_{29} \oplus k_{73}k_{72}k_{53}k_{29} \oplus \\
& k_{60}k_{53}k_{29} \oplus k_{73}k_{60}k_{53}k_{29} \oplus k_{72}k_{71}k_{60}k_{53}k_{29} \oplus k_{54}k_{53}k_{29} \oplus k_{60}k_{54}k_{53}k_{29} \oplus \\
& k_{79}k_{78}k_{47}k_{29} \oplus k_{53}k_{47}k_{29} \oplus k_{60}k_{46}k_{29} \oplus k_{79}k_{78}k_{60}k_{46}k_{29} \oplus k_{60}k_{53}k_{46}k_{29} \oplus \\
& k_{44}k_{29} \oplus k_{43}k_{29} \oplus k_{60}k_{43}k_{29} \oplus k_{42}k_{29} \oplus k_{40}k_{29} \oplus k_{41}k_{40}k_{29} \oplus k_{30}k_{29} \oplus \\
& k_{62}k_{30}k_{29} \oplus k_{70}k_{60}k_{28} \oplus k_{69}k_{60}k_{28} \oplus k_{69}k_{68}k_{60}k_{28} \oplus k_{68}k_{67}k_{60}k_{28} \oplus \\
& k_{60}k_{58}k_{28} \oplus k_{60}k_{56}k_{28} \oplus k_{60}k_{57}k_{56}k_{28} \oplus k_{60}k_{56}k_{55}k_{28} \oplus k_{60}k_{55}k_{54}k_{28} \oplus \\
& k_{60}k_{42}k_{28} \oplus k_{60}k_{42}k_{41}k_{28} \oplus k_{60}k_{31}k_{28} \oplus k_{60}k_{30}k_{28} \oplus k_{78}k_{29}k_{28} \oplus \\
& k_{77}k_{76}k_{29}k_{28} \oplus k_{71}k_{29}k_{28} \oplus k_{70}k_{69}k_{29}k_{28} \oplus k_{60}k_{29}k_{28} \oplus k_{78}k_{58}k_{29}k_{28} \oplus \\
& k_{77}k_{76}k_{58}k_{29}k_{28} \oplus k_{57}k_{29}k_{28} \oplus k_{72}k_{57}k_{29}k_{28} \oplus k_{71}k_{70}k_{57}k_{29}k_{28} \oplus \\
& k_{51}k_{29}k_{28} \oplus k_{58}k_{51}k_{29}k_{28} \oplus k_{57}k_{45}k_{29}k_{28} \oplus k_{44}k_{29}k_{28} \oplus k_{27} \oplus k_{57}k_{28}k_{27} \oplus \\
& k_{56}k_{28}k_{27} \oplus k_{57}k_{30}k_{28}k_{27} \oplus k_{57}k_{29}k_{28}k_{27} \oplus k_{79}k_{78}k_{26} \oplus k_{68}k_{26} \oplus k_{64}k_{26} \oplus \\
& k_{79}k_{78}k_{62}k_{26} \oplus k_{68}k_{62}k_{26} \oplus k_{64}k_{62}k_{26} \oplus k_{79}k_{78}k_{61}k_{60}k_{26} \oplus k_{68}k_{61}k_{60}k_{26} \oplus \\
& k_{64}k_{61}k_{60}k_{26} \oplus k_{53}k_{26} \oplus k_{62}k_{53}k_{26} \oplus k_{61}k_{60}k_{53}k_{26} \oplus k_{79}k_{78}k_{35}k_{26} \oplus \\
& k_{68}k_{35}k_{26} \oplus k_{64}k_{35}k_{26} \oplus k_{53}k_{35}k_{26} \oplus k_{25} \oplus k_{79}k_{25} \oplus k_{79}k_{78}k_{25} \oplus \\
& k_{78}k_{77}k_{25} \oplus k_{79}k_{78}k_{77}k_{25} \oplus k_{70}k_{25} \oplus k_{69}k_{25} \oplus k_{79}k_{68}k_{25} \oplus k_{78}k_{77}k_{68}k_{25} \oplus \\
& k_{69}k_{68}k_{25} \oplus k_{68}k_{67}k_{25} \oplus k_{66}k_{25} \oplus k_{69}k_{65}k_{25} \oplus k_{68}k_{67}k_{65}k_{25} \oplus k_{64}k_{25} \oplus \\
& k_{65}k_{64}k_{25} \oplus k_{79}k_{78}k_{62}k_{25} \oplus k_{68}k_{62}k_{25} \oplus k_{64}k_{62}k_{25} \oplus k_{66}k_{60}k_{25} \oplus \\
& k_{79}k_{78}k_{61}k_{60}k_{25} \oplus k_{68}k_{61}k_{60}k_{25} \oplus k_{64}k_{61}k_{60}k_{25} \oplus k_{59}k_{25} \oplus k_{57}k_{25} \oplus \\
& k_{69}k_{56}k_{25} \oplus k_{68}k_{67}k_{56}k_{25} \oplus k_{57}k_{56}k_{25} \oplus k_{54}k_{25} \oplus k_{79}k_{53}k_{25} \oplus \\
& k_{78}k_{77}k_{53}k_{25} \oplus k_{62}k_{53}k_{25} \oplus k_{61}k_{60}k_{53}k_{25} \oplus k_{52}k_{25} \oplus k_{79}k_{78}k_{52}k_{25} \oplus \\
& k_{68}k_{52}k_{25} \oplus k_{53}k_{52}k_{25} \oplus k_{51}k_{25} \oplus k_{50}k_{49}k_{25} \oplus k_{45}k_{25} \oplus k_{42}k_{25} \oplus \\
& k_{65}k_{42}k_{25} \oplus k_{56}k_{42}k_{25} \oplus k_{42}k_{41}k_{25} \oplus k_{39}k_{25} \oplus k_{79}k_{78}k_{35}k_{25} \oplus k_{68}k_{35}k_{25} \oplus \\
& k_{64}k_{35}k_{25} \oplus k_{53}k_{35}k_{25} \oplus k_{26}k_{25} \oplus k_{77}k_{24} \oplus k_{76}k_{24} \oplus k_{76}k_{75}k_{24} \oplus k_{74}k_{24} \oplus \\
& k_{75}k_{74}k_{24} \oplus k_{73}k_{24} \oplus k_{72}k_{24} \oplus k_{73}k_{72}k_{24} \oplus k_{72}k_{71}k_{24} \oplus k_{70}k_{24} \oplus \\
& k_{71}k_{70}k_{24} \oplus k_{69}k_{24} \oplus k_{68}k_{24} \oplus k_{69}k_{68}k_{24} \oplus k_{67}k_{24} \oplus k_{68}k_{67}k_{24} \oplus k_{66}k_{24} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{67}k_{66}k_{24} \oplus k_{65}k_{24} \oplus k_{66}k_{65}k_{24} \oplus k_{67}k_{64}k_{24} \oplus k_{66}k_{65}k_{64}k_{24} \oplus k_{62}k_{24} \oplus \\
& k_{60}k_{24} \oplus k_{57}k_{24} \oplus k_{56}k_{24} \oplus k_{68}k_{56}k_{24} \oplus k_{67}k_{66}k_{56}k_{24} \oplus k_{65}k_{56}k_{24} \oplus \\
& k_{69}k_{54}k_{24} \oplus k_{68}k_{67}k_{54}k_{24} \oplus k_{66}k_{54}k_{24} \oplus k_{57}k_{54}k_{24} \oplus k_{56}k_{54}k_{24} \oplus k_{52}k_{24} \oplus \\
& k_{50}k_{24} \oplus k_{51}k_{50}k_{24} \oplus k_{49}k_{24} \oplus k_{47}k_{24} \oplus k_{46}k_{24} \oplus k_{45}k_{24} \oplus k_{42}k_{24} \oplus \\
& k_{54}k_{42}k_{24} \oplus k_{41}k_{24} \oplus k_{56}k_{41}k_{24} \oplus k_{42}k_{41}k_{24} \oplus k_{40}k_{24} \oplus k_{64}k_{40}k_{24} \oplus \\
& k_{25}k_{24} \oplus k_{56}k_{25}k_{24} \oplus k_{23} \oplus k_{77}k_{23} \oplus k_{76}k_{23} \oplus k_{76}k_{75}k_{23} \oplus k_{75}k_{74}k_{23} \oplus \\
& k_{70}k_{23} \oplus k_{69}k_{68}k_{23} \oplus k_{67}k_{23} \oplus k_{66}k_{23} \oplus k_{65}k_{23} \oplus k_{66}k_{65}k_{23} \oplus k_{67}k_{64}k_{23} \oplus \\
& k_{66}k_{65}k_{64}k_{23} \oplus k_{62}k_{23} \oplus k_{61}k_{23} \oplus k_{78}k_{60}k_{23} \oplus k_{77}k_{76}k_{60}k_{23} \oplus k_{75}k_{60}k_{23} \oplus \\
& k_{74}k_{73}k_{60}k_{23} \oplus k_{62}k_{60}k_{23} \oplus k_{61}k_{60}k_{23} \oplus k_{75}k_{61}k_{60}k_{23} \oplus k_{74}k_{73}k_{61}k_{60}k_{23} \oplus \\
& k_{75}k_{60}k_{59}k_{23} \oplus k_{74}k_{73}k_{60}k_{59}k_{23} \oplus k_{75}k_{60}k_{58}k_{23} \oplus k_{74}k_{73}k_{60}k_{58}k_{23} \oplus \\
& k_{57}k_{23} \oplus k_{60}k_{57}k_{23} \oplus k_{55}k_{23} \oplus k_{54}k_{23} \oplus k_{66}k_{54}k_{23} \oplus k_{60}k_{51}k_{23} \oplus k_{50}k_{23} \oplus \\
& k_{49}k_{23} \oplus k_{60}k_{48}k_{23} \oplus k_{61}k_{60}k_{48}k_{23} \oplus k_{60}k_{59}k_{48}k_{23} \oplus k_{60}k_{58}k_{48}k_{23} \oplus \\
& k_{42}k_{23} \oplus k_{42}k_{41}k_{23} \oplus k_{40}k_{23} \oplus k_{64}k_{40}k_{23} \oplus k_{41}k_{40}k_{23} \oplus k_{60}k_{35}k_{23} \oplus \\
& k_{75}k_{60}k_{34}k_{23} \oplus k_{74}k_{73}k_{60}k_{34}k_{23} \oplus k_{60}k_{48}k_{34}k_{23} \oplus k_{25}k_{23} \oplus k_{22} \oplus \\
& k_{79}k_{78}k_{22} \oplus k_{77}k_{22} \oplus k_{79}k_{78}k_{76}k_{22} \oplus k_{79}k_{78}k_{77}k_{76}k_{22} \oplus k_{76}k_{75}k_{22} \oplus \\
& k_{78}k_{74}k_{22} \oplus k_{76}k_{74}k_{22} \oplus k_{77}k_{76}k_{74}k_{22} \oplus k_{75}k_{74}k_{22} \oplus k_{79}k_{78}k_{75}k_{74}k_{22} \oplus \\
& k_{73}k_{22} \oplus k_{78}k_{73}k_{22} \oplus k_{76}k_{73}k_{22} \oplus k_{77}k_{76}k_{73}k_{22} \oplus k_{75}k_{74}k_{73}k_{22} \oplus k_{72}k_{22} \oplus \\
& k_{76}k_{72}k_{22} \oplus k_{75}k_{74}k_{72}k_{22} \oplus k_{78}k_{73}k_{72}k_{22} \oplus k_{76}k_{73}k_{72}k_{22} \oplus \\
& k_{77}k_{76}k_{73}k_{72}k_{22} \oplus k_{75}k_{74}k_{73}k_{72}k_{22} \oplus k_{71}k_{22} \oplus k_{78}k_{71}k_{22} \oplus k_{79}k_{78}k_{71}k_{22} \oplus \\
& k_{77}k_{76}k_{71}k_{22} \oplus k_{72}k_{71}k_{22} \oplus k_{78}k_{72}k_{71}k_{22} \oplus k_{76}k_{72}k_{71}k_{22} \oplus \\
& k_{77}k_{76}k_{72}k_{71}k_{22} \oplus k_{75}k_{74}k_{72}k_{71}k_{22} \oplus k_{71}k_{70}k_{22} \oplus k_{76}k_{71}k_{70}k_{22} \oplus \\
& k_{75}k_{74}k_{71}k_{70}k_{22} \oplus k_{70}k_{69}k_{22} \oplus k_{78}k_{70}k_{69}k_{22} \oplus k_{79}k_{78}k_{70}k_{69}k_{22} \oplus \\
& k_{77}k_{76}k_{70}k_{69}k_{22} \oplus k_{72}k_{68}k_{22} \oplus k_{71}k_{70}k_{68}k_{22} \oplus k_{67}k_{22} \oplus k_{66}k_{65}k_{22} \oplus \\
& k_{64}k_{22} \oplus k_{79}k_{78}k_{64}k_{22} \oplus k_{71}k_{64}k_{22} \oplus k_{70}k_{69}k_{64}k_{22} \oplus k_{67}k_{64}k_{22} \oplus \\
& k_{65}k_{64}k_{22} \oplus k_{66}k_{65}k_{64}k_{22} \oplus k_{62}k_{22} \oplus k_{61}k_{22} \oplus k_{78}k_{61}k_{22} \oplus k_{77}k_{76}k_{61}k_{22} \oplus \\
& k_{79}k_{78}k_{77}k_{76}k_{61}k_{22} \oplus k_{59}k_{22} \oplus k_{78}k_{59}k_{22} \oplus k_{77}k_{76}k_{59}k_{22} \oplus k_{71}k_{59}k_{22} \oplus \\
& k_{70}k_{69}k_{59}k_{22} \oplus k_{64}k_{59}k_{22} \oplus k_{60}k_{59}k_{22} \oplus k_{78}k_{60}k_{59}k_{22} \oplus k_{77}k_{76}k_{60}k_{59}k_{22} \oplus \\
& k_{79}k_{78}k_{77}k_{76}k_{60}k_{59}k_{22} \oplus k_{58}k_{22} \oplus k_{78}k_{58}k_{22} \oplus k_{77}k_{76}k_{58}k_{22} \oplus k_{72}k_{58}k_{22} \oplus \\
& k_{71}k_{58}k_{22} \oplus k_{71}k_{70}k_{58}k_{22} \oplus k_{70}k_{69}k_{58}k_{22} \oplus k_{60}k_{58}k_{22} \oplus k_{57}k_{22} \oplus \\
& k_{78}k_{57}k_{22} \oplus k_{77}k_{76}k_{57}k_{22} \oplus k_{72}k_{57}k_{22} \oplus k_{71}k_{57}k_{22} \oplus k_{71}k_{70}k_{57}k_{22} \oplus \\
& k_{70}k_{69}k_{57}k_{22} \oplus k_{64}k_{57}k_{22} \oplus k_{61}k_{57}k_{22} \oplus k_{60}k_{57}k_{22} \oplus k_{60}k_{59}k_{57}k_{22} \oplus \\
& k_{58}k_{57}k_{22} \oplus k_{78}k_{58}k_{57}k_{22} \oplus k_{77}k_{76}k_{58}k_{57}k_{22} \oplus k_{71}k_{58}k_{57}k_{22} \oplus \\
& k_{70}k_{69}k_{58}k_{57}k_{22} \oplus k_{64}k_{58}k_{57}k_{22} \oplus k_{59}k_{58}k_{57}k_{22} \oplus k_{56}k_{22} \oplus k_{72}k_{56}k_{22} \oplus \\
& k_{79}k_{78}k_{72}k_{56}k_{22} \oplus k_{71}k_{70}k_{56}k_{22} \oplus k_{79}k_{78}k_{71}k_{70}k_{56}k_{22} \oplus k_{59}k_{56}k_{22} \oplus \\
& k_{60}k_{57}k_{56}k_{22} \oplus k_{58}k_{57}k_{56}k_{22} \oplus k_{55}k_{22} \oplus k_{72}k_{55}k_{22} \oplus k_{71}k_{70}k_{55}k_{22} \oplus \\
& k_{54}k_{22} \oplus k_{66}k_{54}k_{22} \oplus k_{55}k_{54}k_{22} \oplus k_{78}k_{53}k_{22} \oplus k_{76}k_{53}k_{22} \oplus k_{77}k_{76}k_{53}k_{22} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{75}k_{74}k_{53}k_{22} \oplus k_{71}k_{53}k_{22} \oplus k_{70}k_{69}k_{53}k_{22} \oplus k_{64}k_{53}k_{22} \oplus k_{61}k_{53}k_{22} \oplus \\
& k_{78}k_{61}k_{53}k_{22} \oplus k_{77}k_{76}k_{61}k_{53}k_{22} \oplus k_{60}k_{59}k_{53}k_{22} \oplus k_{78}k_{60}k_{59}k_{53}k_{22} \oplus \\
& k_{77}k_{76}k_{60}k_{59}k_{53}k_{22} \oplus k_{72}k_{56}k_{53}k_{22} \oplus k_{71}k_{70}k_{56}k_{53}k_{22} \oplus k_{79}k_{78}k_{51}k_{22} \oplus \\
& k_{74}k_{51}k_{22} \oplus k_{73}k_{51}k_{22} \oplus k_{73}k_{72}k_{51}k_{22} \oplus k_{71}k_{51}k_{22} \oplus k_{72}k_{71}k_{51}k_{22} \oplus \\
& k_{70}k_{69}k_{51}k_{22} \oplus k_{61}k_{51}k_{22} \oplus k_{79}k_{78}k_{61}k_{51}k_{22} \oplus k_{59}k_{51}k_{22} \oplus k_{60}k_{59}k_{51}k_{22} \oplus \\
& k_{79}k_{78}k_{60}k_{59}k_{51}k_{22} \oplus k_{58}k_{51}k_{22} \oplus k_{57}k_{51}k_{22} \oplus k_{58}k_{57}k_{51}k_{22} \oplus k_{53}k_{51}k_{22} \oplus \\
& k_{61}k_{53}k_{51}k_{22} \oplus k_{60}k_{59}k_{53}k_{51}k_{22} \oplus k_{50}k_{22} \oplus k_{79}k_{78}k_{49}k_{22} \oplus k_{74}k_{49}k_{22} \oplus \\
& k_{73}k_{49}k_{22} \oplus k_{72}k_{49}k_{22} \oplus k_{73}k_{72}k_{49}k_{22} \oplus k_{72}k_{71}k_{49}k_{22} \oplus k_{71}k_{70}k_{49}k_{22} \oplus \\
& k_{53}k_{49}k_{22} \oplus k_{48}k_{22} \oplus k_{78}k_{47}k_{22} \oplus k_{76}k_{47}k_{22} \oplus k_{77}k_{76}k_{47}k_{22} \oplus \\
& k_{75}k_{74}k_{47}k_{22} \oplus k_{51}k_{47}k_{22} \oplus k_{49}k_{47}k_{22} \oplus k_{46}k_{22} \oplus k_{78}k_{46}k_{22} \oplus k_{76}k_{46}k_{22} \oplus \\
& k_{77}k_{76}k_{46}k_{22} \oplus k_{75}k_{74}k_{46}k_{22} \oplus k_{51}k_{46}k_{22} \oplus k_{49}k_{46}k_{22} \oplus k_{47}k_{46}k_{22} \oplus \\
& k_{45}k_{22} \oplus k_{76}k_{45}k_{22} \oplus k_{75}k_{74}k_{45}k_{22} \oplus k_{68}k_{45}k_{22} \oplus k_{58}k_{45}k_{22} \oplus k_{57}k_{45}k_{22} \oplus \\
& k_{56}k_{45}k_{22} \oplus k_{79}k_{78}k_{56}k_{45}k_{22} \oplus k_{55}k_{45}k_{22} \oplus k_{56}k_{53}k_{45}k_{22} \oplus k_{49}k_{45}k_{22} \oplus \\
& k_{44}k_{22} \oplus k_{78}k_{44}k_{22} \oplus k_{79}k_{78}k_{44}k_{22} \oplus k_{77}k_{76}k_{44}k_{22} \oplus k_{64}k_{44}k_{22} \oplus \\
& k_{60}k_{44}k_{22} \oplus k_{59}k_{44}k_{22} \oplus k_{58}k_{44}k_{22} \oplus k_{57}k_{44}k_{22} \oplus k_{58}k_{57}k_{44}k_{22} \oplus \\
& k_{53}k_{44}k_{22} \oplus k_{51}k_{44}k_{22} \oplus k_{43}k_{22} \oplus k_{60}k_{43}k_{42}k_{22} \oplus k_{42}k_{41}k_{22} \oplus k_{40}k_{22} \oplus \\
& k_{64}k_{40}k_{22} \oplus k_{39}k_{22} \oplus k_{34}k_{22} \oplus k_{78}k_{34}k_{22} \oplus k_{77}k_{76}k_{34}k_{22} \oplus \\
& k_{79}k_{78}k_{77}k_{76}k_{34}k_{22} \oplus k_{57}k_{34}k_{22} \oplus k_{53}k_{34}k_{22} \oplus k_{78}k_{53}k_{34}k_{22} \oplus \\
& k_{77}k_{76}k_{53}k_{34}k_{22} \oplus k_{51}k_{34}k_{22} \oplus k_{79}k_{78}k_{51}k_{34}k_{22} \oplus k_{53}k_{51}k_{34}k_{22} \oplus \\
& k_{57}k_{33}k_{22} \oplus k_{32}k_{22} \oplus k_{56}k_{32}k_{22} \oplus k_{60}k_{31}k_{22} \oplus k_{29}k_{22} \oplus k_{25}k_{22} \oplus \\
& k_{79}k_{78}k_{21} \oplus k_{76}k_{21} \oplus k_{74}k_{21} \oplus k_{79}k_{78}k_{74}k_{21} \oplus k_{75}k_{74}k_{21} \oplus k_{73}k_{21} \oplus \\
& k_{73}k_{72}k_{21} \oplus k_{79}k_{78}k_{73}k_{72}k_{21} \oplus k_{74}k_{71}k_{21} \oplus k_{72}k_{71}k_{21} \oplus k_{73}k_{72}k_{71}k_{21} \oplus \\
& k_{69}k_{21} \oplus k_{74}k_{70}k_{69}k_{21} \oplus k_{73}k_{72}k_{70}k_{69}k_{21} \oplus k_{72}k_{68}k_{21} \oplus k_{71}k_{70}k_{68}k_{21} \oplus \\
& k_{67}k_{21} \oplus k_{74}k_{67}k_{21} \oplus k_{73}k_{72}k_{67}k_{21} \oplus k_{68}k_{67}k_{21} \oplus k_{66}k_{21} \oplus k_{66}k_{65}k_{21} \oplus \\
& k_{74}k_{66}k_{65}k_{21} \oplus k_{73}k_{72}k_{66}k_{65}k_{21} \oplus k_{65}k_{64}k_{21} \oplus k_{74}k_{61}k_{21} \oplus k_{73}k_{61}k_{21} \oplus \\
& k_{73}k_{72}k_{61}k_{21} \oplus k_{72}k_{71}k_{61}k_{21} \oplus k_{67}k_{61}k_{21} \oplus k_{66}k_{65}k_{61}k_{21} \oplus k_{60}k_{21} \oplus \\
& k_{74}k_{60}k_{21} \oplus k_{73}k_{60}k_{21} \oplus k_{72}k_{60}k_{21} \oplus k_{73}k_{72}k_{60}k_{21} \oplus k_{72}k_{71}k_{60}k_{21} \oplus \\
& k_{71}k_{70}k_{60}k_{21} \oplus k_{74}k_{59}k_{21} \oplus k_{73}k_{72}k_{59}k_{21} \oplus k_{74}k_{60}k_{59}k_{21} \oplus k_{73}k_{60}k_{59}k_{21} \oplus \\
& k_{73}k_{72}k_{60}k_{59}k_{21} \oplus k_{72}k_{71}k_{60}k_{59}k_{21} \oplus k_{67}k_{60}k_{59}k_{21} \oplus k_{66}k_{65}k_{60}k_{59}k_{21} \oplus \\
& k_{74}k_{58}k_{21} \oplus k_{73}k_{72}k_{58}k_{21} \oplus k_{72}k_{60}k_{58}k_{21} \oplus k_{71}k_{70}k_{60}k_{58}k_{21} \oplus k_{59}k_{58}k_{21} \oplus \\
& k_{74}k_{59}k_{58}k_{21} \oplus k_{73}k_{59}k_{58}k_{21} \oplus k_{72}k_{59}k_{58}k_{21} \oplus k_{73}k_{72}k_{59}k_{58}k_{21} \oplus \\
& k_{72}k_{71}k_{59}k_{58}k_{21} \oplus k_{71}k_{70}k_{59}k_{58}k_{21} \oplus k_{72}k_{57}k_{21} \oplus k_{71}k_{70}k_{57}k_{21} \oplus \\
& k_{74}k_{58}k_{57}k_{21} \oplus k_{72}k_{58}k_{57}k_{21} \oplus k_{73}k_{72}k_{58}k_{57}k_{21} \oplus k_{71}k_{70}k_{58}k_{57}k_{21} \oplus \\
& k_{56}k_{21} \oplus k_{57}k_{56}k_{21} \oplus k_{55}k_{21} \oplus k_{56}k_{55}k_{21} \oplus k_{53}k_{21} \oplus k_{74}k_{53}k_{21} \oplus \\
& k_{73}k_{72}k_{53}k_{21} \oplus k_{79}k_{78}k_{47}k_{21} \oplus k_{71}k_{47}k_{21} \oplus k_{70}k_{69}k_{47}k_{21} \oplus k_{67}k_{47}k_{21} \oplus \\
& k_{66}k_{65}k_{47}k_{21} \oplus k_{61}k_{47}k_{21} \oplus k_{60}k_{47}k_{21} \oplus k_{59}k_{47}k_{21} \oplus k_{60}k_{59}k_{47}k_{21} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{58}k_{47}k_{21} \oplus k_{59}k_{58}k_{47}k_{21} \oplus k_{58}k_{57}k_{47}k_{21} \oplus k_{53}k_{47}k_{21} \oplus k_{48}k_{47}k_{21} \oplus \\
& k_{46}k_{21} \oplus k_{61}k_{46}k_{21} \oplus k_{60}k_{46}k_{21} \oplus k_{60}k_{59}k_{46}k_{21} \oplus k_{59}k_{58}k_{46}k_{21} \oplus \\
& k_{68}k_{45}k_{21} \oplus k_{60}k_{45}k_{21} \oplus k_{60}k_{58}k_{45}k_{21} \oplus k_{59}k_{58}k_{45}k_{21} \oplus k_{57}k_{45}k_{21} \oplus \\
& k_{58}k_{57}k_{45}k_{21} \oplus k_{46}k_{45}k_{21} \oplus k_{44}k_{21} \oplus k_{74}k_{44}k_{21} \oplus k_{73}k_{72}k_{44}k_{21} \oplus \\
& k_{47}k_{44}k_{21} \oplus k_{42}k_{21} \oplus k_{43}k_{42}k_{21} \oplus k_{40}k_{21} \oplus k_{74}k_{40}k_{21} \oplus k_{73}k_{72}k_{40}k_{21} \oplus \\
& k_{61}k_{40}k_{21} \oplus k_{60}k_{59}k_{40}k_{21} \oplus k_{47}k_{40}k_{21} \oplus k_{39}k_{21} \oplus k_{74}k_{34}k_{21} \oplus k_{73}k_{34}k_{21} \oplus \\
& k_{73}k_{72}k_{34}k_{21} \oplus k_{72}k_{71}k_{34}k_{21} \oplus k_{67}k_{34}k_{21} \oplus k_{66}k_{65}k_{34}k_{21} \oplus k_{47}k_{34}k_{21} \oplus \\
& k_{46}k_{34}k_{21} \oplus k_{40}k_{34}k_{21} \oplus k_{33}k_{21} \oplus k_{74}k_{33}k_{21} \oplus k_{73}k_{33}k_{21} \oplus k_{72}k_{33}k_{21} \oplus \\
& k_{73}k_{72}k_{33}k_{21} \oplus k_{72}k_{71}k_{33}k_{21} \oplus k_{71}k_{70}k_{33}k_{21} \oplus k_{72}k_{58}k_{33}k_{21} \oplus \\
& k_{71}k_{70}k_{58}k_{33}k_{21} \oplus k_{47}k_{33}k_{21} \oplus k_{46}k_{33}k_{21} \oplus k_{45}k_{33}k_{21} \oplus k_{58}k_{45}k_{33}k_{21} \oplus \\
& k_{72}k_{32}k_{21} \oplus k_{71}k_{70}k_{32}k_{21} \oplus k_{72}k_{58}k_{32}k_{21} \oplus k_{71}k_{70}k_{58}k_{32}k_{21} \oplus k_{45}k_{32}k_{21} \oplus \\
& k_{58}k_{45}k_{32}k_{21} \oplus k_{31}k_{21} \oplus k_{22}k_{21} \oplus k_{20} \oplus k_{79}k_{78}k_{76}k_{20} \oplus k_{79}k_{78}k_{77}k_{76}k_{20} \oplus \\
& k_{79}k_{78}k_{75}k_{74}k_{20} \oplus k_{71}k_{20} \oplus k_{70}k_{69}k_{20} \oplus k_{72}k_{68}k_{20} \oplus k_{71}k_{70}k_{68}k_{20} \oplus \\
& k_{66}k_{20} \oplus k_{75}k_{64}k_{20} \oplus k_{74}k_{73}k_{64}k_{20} \oplus k_{60}k_{20} \oplus k_{72}k_{60}k_{20} \oplus k_{71}k_{70}k_{60}k_{20} \oplus \\
& k_{64}k_{60}k_{20} \oplus k_{75}k_{64}k_{60}k_{20} \oplus k_{74}k_{73}k_{64}k_{60}k_{20} \oplus k_{64}k_{59}k_{20} \oplus k_{75}k_{64}k_{59}k_{20} \oplus \\
& k_{74}k_{73}k_{64}k_{59}k_{20} \oplus k_{58}k_{20} \oplus k_{77}k_{58}k_{20} \oplus k_{76}k_{58}k_{20} \oplus k_{76}k_{74}k_{73}k_{58}k_{20} \oplus \\
& k_{75}k_{74}k_{73}k_{58}k_{20} \oplus k_{64}k_{58}k_{20} \oplus k_{75}k_{64}k_{58}k_{20} \oplus k_{74}k_{73}k_{64}k_{58}k_{20} \oplus \\
& k_{60}k_{58}k_{20} \oplus k_{72}k_{60}k_{58}k_{20} \oplus k_{71}k_{70}k_{60}k_{58}k_{20} \oplus k_{64}k_{60}k_{58}k_{20} \oplus \\
& k_{75}k_{64}k_{60}k_{58}k_{20} \oplus k_{74}k_{73}k_{64}k_{60}k_{58}k_{20} \oplus k_{72}k_{59}k_{58}k_{20} \oplus k_{71}k_{70}k_{59}k_{58}k_{20} \oplus \\
& k_{64}k_{59}k_{58}k_{20} \oplus k_{75}k_{64}k_{59}k_{58}k_{20} \oplus k_{74}k_{73}k_{64}k_{59}k_{58}k_{20} \oplus k_{78}k_{57}k_{20} \oplus \\
& k_{77}k_{76}k_{57}k_{20} \oplus k_{72}k_{57}k_{20} \oplus k_{71}k_{70}k_{57}k_{20} \oplus k_{58}k_{57}k_{20} \oplus k_{78}k_{58}k_{57}k_{20} \oplus \\
& k_{76}k_{58}k_{57}k_{20} \oplus k_{77}k_{76}k_{58}k_{57}k_{20} \oplus k_{75}k_{74}k_{58}k_{57}k_{20} \oplus k_{72}k_{58}k_{57}k_{20} \oplus \\
& k_{71}k_{70}k_{58}k_{57}k_{20} \oplus k_{56}k_{20} \oplus k_{78}k_{56}k_{20} \oplus k_{77}k_{76}k_{56}k_{20} \oplus k_{64}k_{56}k_{20} \oplus \\
& k_{57}k_{56}k_{20} \oplus k_{53}k_{20} \oplus k_{78}k_{53}k_{20} \oplus k_{76}k_{53}k_{20} \oplus k_{77}k_{76}k_{53}k_{20} \oplus \\
& k_{75}k_{74}k_{53}k_{20} \oplus k_{79}k_{78}k_{51}k_{20} \oplus k_{57}k_{51}k_{20} \oplus k_{58}k_{57}k_{51}k_{20} \oplus k_{56}k_{51}k_{20} \oplus \\
& k_{53}k_{51}k_{20} \oplus k_{58}k_{50}k_{20} \oplus k_{79}k_{78}k_{49}k_{20} \oplus k_{58}k_{49}k_{20} \oplus k_{75}k_{58}k_{49}k_{20} \oplus \\
& k_{74}k_{73}k_{58}k_{49}k_{20} \oplus k_{58}k_{57}k_{49}k_{20} \oplus k_{53}k_{49}k_{20} \oplus k_{48}k_{20} \oplus k_{64}k_{48}k_{20} \oplus \\
& k_{64}k_{60}k_{48}k_{20} \oplus k_{64}k_{59}k_{48}k_{20} \oplus k_{76}k_{58}k_{48}k_{20} \oplus k_{75}k_{74}k_{58}k_{48}k_{20} \oplus \\
& k_{64}k_{58}k_{48}k_{20} \oplus k_{64}k_{60}k_{58}k_{48}k_{20} \oplus k_{64}k_{59}k_{58}k_{48}k_{20} \oplus k_{58}k_{49}k_{48}k_{20} \oplus \\
& k_{47}k_{46}k_{20} \oplus k_{68}k_{45}k_{20} \oplus k_{60}k_{45}k_{20} \oplus k_{60}k_{58}k_{45}k_{20} \oplus k_{59}k_{58}k_{45}k_{20} \oplus \\
& k_{57}k_{45}k_{20} \oplus k_{58}k_{57}k_{45}k_{20} \oplus k_{44}k_{20} \oplus k_{33}k_{20} \oplus k_{72}k_{33}k_{20} \oplus k_{71}k_{70}k_{33}k_{20} \oplus \\
& k_{64}k_{33}k_{20} \oplus k_{75}k_{64}k_{33}k_{20} \oplus k_{74}k_{73}k_{64}k_{33}k_{20} \oplus k_{58}k_{33}k_{20} \oplus k_{72}k_{58}k_{33}k_{20} \oplus \\
& k_{71}k_{70}k_{58}k_{33}k_{20} \oplus k_{64}k_{58}k_{33}k_{20} \oplus k_{75}k_{64}k_{58}k_{33}k_{20} \oplus k_{74}k_{73}k_{64}k_{58}k_{33}k_{20} \oplus \\
& k_{64}k_{48}k_{33}k_{20} \oplus k_{64}k_{58}k_{48}k_{33}k_{20} \oplus k_{45}k_{33}k_{20} \oplus k_{58}k_{45}k_{33}k_{20} \oplus k_{32}k_{20} \oplus \\
& k_{72}k_{32}k_{20} \oplus k_{71}k_{70}k_{32}k_{20} \oplus k_{64}k_{32}k_{20} \oplus k_{75}k_{64}k_{32}k_{20} \oplus k_{74}k_{73}k_{64}k_{32}k_{20} \oplus \\
& k_{72}k_{58}k_{32}k_{20} \oplus k_{71}k_{70}k_{58}k_{32}k_{20} \oplus k_{64}k_{58}k_{32}k_{20} \oplus k_{75}k_{64}k_{58}k_{32}k_{20} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{74}k_{73}k_{64}k_{58}k_{32}k_{20} \oplus k_{64}k_{48}k_{32}k_{20} \oplus k_{64}k_{58}k_{48}k_{32}k_{20} \oplus k_{45}k_{32}k_{20} \oplus \\
& k_{58}k_{45}k_{32}k_{20} \oplus k_{31}k_{20} \oplus k_{21}k_{20} \oplus k_{19} \oplus k_{78}k_{19} \oplus k_{77}k_{76}k_{19} \oplus k_{74}k_{19} \oplus \\
& k_{73}k_{19} \oplus k_{73}k_{72}k_{19} \oplus k_{71}k_{19} \oplus k_{72}k_{71}k_{19} \oplus k_{70}k_{69}k_{19} \oplus k_{66}k_{19} \oplus \\
& k_{79}k_{64}k_{19} \oplus k_{78}k_{77}k_{64}k_{19} \oplus k_{75}k_{64}k_{19} \oplus k_{74}k_{73}k_{64}k_{19} \oplus k_{61}k_{19} \oplus \\
& k_{60}k_{59}k_{19} \oplus k_{58}k_{19} \oplus k_{78}k_{58}k_{19} \oplus k_{77}k_{76}k_{58}k_{19} \oplus k_{74}k_{58}k_{19} \oplus k_{73}k_{58}k_{19} \oplus \\
& k_{73}k_{72}k_{58}k_{19} \oplus k_{72}k_{71}k_{58}k_{19} \oplus k_{64}k_{58}k_{19} \oplus k_{79}k_{64}k_{58}k_{19} \oplus \\
& k_{78}k_{77}k_{64}k_{58}k_{19} \oplus k_{75}k_{64}k_{58}k_{19} \oplus k_{74}k_{73}k_{64}k_{58}k_{19} \oplus k_{60}k_{58}k_{19} \oplus \\
& k_{59}k_{58}k_{19} \oplus k_{57}k_{19} \oplus k_{58}k_{57}k_{19} \oplus k_{56}k_{19} \oplus k_{64}k_{52}k_{19} \oplus k_{64}k_{58}k_{52}k_{19} \oplus \\
& k_{51}k_{19} \oplus k_{58}k_{51}k_{19} \oplus k_{64}k_{48}k_{19} \oplus k_{64}k_{58}k_{48}k_{19} \oplus k_{47}k_{19} \oplus k_{58}k_{47}k_{19} \oplus \\
& k_{46}k_{19} \oplus k_{58}k_{46}k_{19} \oplus k_{44}k_{19} \oplus k_{34}k_{19} \oplus k_{58}k_{33}k_{19} \oplus k_{20}k_{19} \oplus k_{67}k_{18} \oplus \\
& k_{66}k_{18} \oplus k_{65}k_{18} \oplus k_{64}k_{63}k_{18} \oplus k_{66}k_{64}k_{63}k_{18} \oplus k_{65}k_{64}k_{63}k_{18} \oplus k_{52}k_{18} \oplus \\
& k_{51}k_{50}k_{18} \oplus k_{40}k_{18} \oplus k_{39}k_{18} \oplus k_{65}k_{39}k_{18} \oplus k_{64}k_{63}k_{39}k_{18} \oplus k_{38}k_{18} \oplus \\
& k_{66}k_{38}k_{18} \oplus k_{65}k_{64}k_{38}k_{18} \oplus k_{39}k_{38}k_{18} \oplus k_{31}k_{18} \oplus k_{25}k_{18} \oplus k_{19}k_{18} \oplus k_{17} \oplus \\
& k_{73}k_{17} \oplus k_{72}k_{71}k_{17} \oplus k_{60}k_{17} \oplus k_{69}k_{60}k_{17} \oplus k_{68}k_{67}k_{60}k_{17} \oplus k_{57}k_{17} \oplus \\
& k_{56}k_{17} \oplus k_{55}k_{17} \oplus k_{54}k_{17} \oplus k_{46}k_{17} \oplus k_{60}k_{42}k_{17} \oplus k_{60}k_{22}k_{17} \oplus k_{21}k_{17} \oplus \\
& k_{16} \oplus k_{78}k_{16} \oplus k_{76}k_{16} \oplus k_{77}k_{76}k_{16} \oplus k_{75}k_{74}k_{16} \oplus k_{76}k_{72}k_{16} \oplus \\
& k_{75}k_{74}k_{72}k_{16} \oplus k_{70}k_{16} \oplus k_{76}k_{71}k_{70}k_{16} \oplus k_{75}k_{74}k_{71}k_{70}k_{16} \oplus k_{69}k_{68}k_{16} \oplus \\
& k_{60}k_{16} \oplus k_{70}k_{60}k_{16} \oplus k_{69}k_{68}k_{60}k_{16} \oplus k_{57}k_{16} \oplus k_{55}k_{16} \oplus k_{60}k_{55}k_{16} \oplus \\
& k_{60}k_{54}k_{53}k_{16} \oplus k_{49}k_{16} \oplus k_{72}k_{49}k_{16} \oplus k_{71}k_{70}k_{49}k_{16} \oplus k_{50}k_{49}k_{16} \oplus \\
& k_{76}k_{45}k_{16} \oplus k_{75}k_{74}k_{45}k_{16} \oplus k_{49}k_{45}k_{16} \oplus k_{43}k_{16} \oplus k_{60}k_{43}k_{16} \oplus k_{42}k_{16} \oplus \\
& k_{41}k_{40}k_{16} \oplus k_{60}k_{28}k_{16} \oplus k_{25}k_{16} \oplus k_{24}k_{16} \oplus k_{23}k_{16} \oplus k_{22}k_{16} \oplus k_{17}k_{16} \oplus \\
& k_{57}k_{15} \oplus k_{60}k_{57}k_{15} \oplus k_{76}k_{56}k_{15} \oplus k_{75}k_{74}k_{56}k_{15} \oplus k_{60}k_{56}k_{55}k_{15} \oplus \\
& k_{55}k_{54}k_{15} \oplus k_{52}k_{15} \oplus k_{51}k_{50}k_{15} \oplus k_{56}k_{49}k_{15} \oplus k_{47}k_{15} \oplus k_{46}k_{45}k_{15} \oplus \\
& k_{43}k_{15} \oplus k_{42}k_{41}k_{15} \oplus k_{60}k_{30}k_{15} \oplus k_{29}k_{15} \oplus k_{23}k_{15} \oplus k_{20}k_{15} \oplus k_{16}k_{15} \oplus \\
& k_{14} \oplus k_{79}k_{78}k_{14} \oplus k_{68}k_{14} \oplus k_{70}k_{66}k_{14} \oplus k_{69}k_{68}k_{66}k_{14} \oplus k_{67}k_{66}k_{14} \oplus \\
& k_{60}k_{14} \oplus k_{79}k_{78}k_{56}k_{14} \oplus k_{73}k_{56}k_{14} \oplus k_{72}k_{71}k_{56}k_{14} \oplus k_{68}k_{56}k_{14} \oplus \\
& k_{67}k_{66}k_{56}k_{14} \oplus k_{60}k_{56}k_{14} \oplus k_{73}k_{55}k_{14} \oplus k_{72}k_{71}k_{55}k_{14} \oplus k_{69}k_{55}k_{14} \oplus \\
& k_{68}k_{67}k_{55}k_{14} \oplus k_{57}k_{55}k_{14} \oplus k_{56}k_{55}k_{14} \oplus k_{54}k_{14} \oplus k_{69}k_{54}k_{14} \oplus \\
& k_{68}k_{67}k_{54}k_{14} \oplus k_{57}k_{54}k_{14} \oplus k_{56}k_{54}k_{14} \oplus k_{53}k_{14} \oplus k_{56}k_{53}k_{14} \oplus k_{56}k_{46}k_{14} \oplus \\
& k_{55}k_{46}k_{14} \oplus k_{66}k_{43}k_{14} \oplus k_{55}k_{42}k_{14} \oplus k_{54}k_{42}k_{14} \oplus k_{41}k_{14} \oplus k_{56}k_{41}k_{14} \oplus \\
& k_{25}k_{14} \oplus k_{69}k_{25}k_{14} \oplus k_{68}k_{67}k_{25}k_{14} \oplus k_{57}k_{25}k_{14} \oplus k_{56}k_{25}k_{14} \oplus k_{42}k_{25}k_{14} \oplus \\
& k_{56}k_{24}k_{14} \oplus k_{57}k_{15}k_{14} \oplus k_{73}k_{69}k_{13} \oplus k_{72}k_{71}k_{69}k_{13} \oplus k_{73}k_{68}k_{67}k_{13} \oplus \\
& k_{72}k_{71}k_{68}k_{67}k_{13} \oplus k_{73}k_{57}k_{13} \oplus k_{72}k_{71}k_{57}k_{13} \oplus k_{73}k_{56}k_{13} \oplus k_{72}k_{71}k_{56}k_{13} \oplus \\
& k_{73}k_{55}k_{13} \oplus k_{72}k_{71}k_{55}k_{13} \oplus k_{73}k_{56}k_{55}k_{13} \oplus k_{72}k_{71}k_{56}k_{55}k_{13} \oplus k_{69}k_{46}k_{13} \oplus \\
& k_{68}k_{67}k_{46}k_{13} \oplus k_{57}k_{46}k_{13} \oplus k_{56}k_{46}k_{13} \oplus k_{55}k_{46}k_{13} \oplus k_{56}k_{55}k_{46}k_{13} \oplus \\
& k_{44}k_{13} \oplus k_{43}k_{13} \oplus k_{73}k_{42}k_{13} \oplus k_{72}k_{71}k_{42}k_{13} \oplus k_{46}k_{42}k_{13} \oplus k_{43}k_{42}k_{13} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{42}k_{41}k_{13} \oplus k_{17}k_{13} \oplus k_{16}k_{13} \oplus k_{57}k_{14}k_{13} \oplus k_{60}k_{57}k_{12} \oplus k_{60}k_{55}k_{12} \oplus \\
& k_{13}k_{12} \oplus k_{70}k_{13}k_{12} \oplus k_{68}k_{13}k_{12} \oplus k_{69}k_{68}k_{13}k_{12} \oplus k_{70}k_{66}k_{13}k_{12} \oplus \\
& k_{69}k_{68}k_{66}k_{13}k_{12} \oplus k_{67}k_{66}k_{13}k_{12} \oplus k_{60}k_{13}k_{12} \oplus k_{56}k_{13}k_{12} \oplus k_{68}k_{56}k_{13}k_{12} \oplus \\
& k_{67}k_{66}k_{56}k_{13}k_{12} \oplus k_{60}k_{56}k_{13}k_{12} \oplus k_{55}k_{13}k_{12} \oplus k_{69}k_{55}k_{13}k_{12} \oplus \\
& k_{68}k_{67}k_{55}k_{13}k_{12} \oplus k_{57}k_{55}k_{13}k_{12} \oplus k_{56}k_{55}k_{13}k_{12} \oplus k_{54}k_{13}k_{12} \oplus \\
& k_{69}k_{54}k_{13}k_{12} \oplus k_{68}k_{67}k_{54}k_{13}k_{12} \oplus k_{57}k_{54}k_{13}k_{12} \oplus k_{56}k_{54}k_{13}k_{12} \oplus \\
& k_{43}k_{13}k_{12} \oplus k_{66}k_{43}k_{13}k_{12} \oplus k_{55}k_{42}k_{13}k_{12} \oplus k_{54}k_{42}k_{13}k_{12} \oplus k_{41}k_{13}k_{12} \oplus \\
& k_{56}k_{41}k_{13}k_{12} \oplus k_{25}k_{13}k_{12} \oplus k_{69}k_{25}k_{13}k_{12} \oplus k_{68}k_{67}k_{25}k_{13}k_{12} \oplus \\
& k_{57}k_{25}k_{13}k_{12} \oplus k_{56}k_{25}k_{13}k_{12} \oplus k_{42}k_{25}k_{13}k_{12} \oplus k_{56}k_{24}k_{13}k_{12} \oplus k_{79}k_{78}k_{11} \oplus \\
& k_{70}k_{11} \oplus k_{68}k_{11} \oplus k_{69}k_{68}k_{11} \oplus k_{64}k_{11} \oplus k_{79}k_{78}k_{62}k_{11} \oplus k_{68}k_{62}k_{11} \oplus \\
& k_{64}k_{62}k_{11} \oplus k_{60}k_{11} \oplus k_{69}k_{60}k_{11} \oplus k_{68}k_{67}k_{60}k_{11} \oplus k_{79}k_{78}k_{61}k_{60}k_{11} \oplus \\
& k_{68}k_{61}k_{60}k_{11} \oplus k_{64}k_{61}k_{60}k_{11} \oplus k_{60}k_{57}k_{11} \oplus k_{53}k_{11} \oplus k_{62}k_{53}k_{11} \oplus \\
& k_{61}k_{60}k_{53}k_{11} \oplus k_{43}k_{11} \oplus k_{60}k_{42}k_{11} \oplus k_{79}k_{78}k_{35}k_{11} \oplus k_{68}k_{35}k_{11} \oplus \\
& k_{64}k_{35}k_{11} \oplus k_{53}k_{35}k_{11} \oplus k_{44}k_{12}k_{11} \oplus k_{43}k_{12}k_{11} \oplus k_{43}k_{42}k_{12}k_{11} \oplus \\
& k_{42}k_{41}k_{12}k_{11} \oplus k_{17}k_{12}k_{11} \oplus k_{16}k_{12}k_{11} \oplus k_{10} \oplus k_{69}k_{10} \oplus k_{68}k_{67}k_{10} \oplus \\
& k_{42}k_{10} \oplus k_{77}k_9 \oplus k_{76}k_{75}k_9 \oplus k_{72}k_9 \oplus k_{70}k_9 \oplus k_{71}k_{70}k_9 \oplus k_{69}k_9 \oplus \\
& k_{69}k_{68}k_9 \oplus k_{67}k_9 \oplus k_{68}k_{67}k_9 \oplus k_{66}k_9 \oplus k_{65}k_9 \oplus k_{66}k_{65}k_9 \oplus k_{67}k_{64}k_9 \oplus \\
& k_{66}k_{65}k_{64}k_9 \oplus k_{74}k_{62}k_9 \oplus k_{73}k_{72}k_{62}k_9 \oplus k_{75}k_{60}k_9 \oplus k_{74}k_{73}k_{60}k_9 \oplus \\
& k_{64}k_{60}k_9 \oplus k_{62}k_{60}k_9 \oplus k_{57}k_9 \oplus k_{60}k_{56}k_9 \oplus k_{60}k_{57}k_{56}k_9 \oplus k_{60}k_{55}k_9 \oplus \\
& k_{54}k_9 \oplus k_{66}k_{54}k_9 \oplus k_{60}k_{55}k_{54}k_9 \oplus k_{60}k_{57}k_{55}k_{54}k_9 \oplus k_{50}k_9 \oplus k_{60}k_{48}k_9 \oplus \\
& k_{62}k_{47}k_9 \oplus k_{43}k_9 \oplus k_{42}k_9 \oplus k_{40}k_9 \oplus k_{64}k_{40}k_9 \oplus k_{60}k_{39}k_9 \oplus k_{60}k_{38}k_{37}k_9 \oplus \\
& k_{60}k_{29}k_9 \oplus k_{60}k_{57}k_{29}k_9 \oplus k_{60}k_{25}k_9 \oplus k_{24}k_9 \oplus k_{22}k_9 \oplus k_{60}k_{12}k_9 \oplus k_8 \oplus \\
& k_{74}k_8 \oplus k_{73}k_{72}k_8 \oplus k_{60}k_8 \oplus k_{47}k_8 \oplus k_7 \oplus k_{78}k_7 \oplus k_{79}k_{78}k_7 \oplus k_{77}k_7 \oplus \\
& k_{76}k_7 \oplus k_{75}k_{74}k_7 \oplus k_{77}k_{75}k_{74}k_7 \oplus k_{76}k_{75}k_{74}k_7 \oplus k_{73}k_7 \oplus k_{72}k_7 \oplus \\
& k_{73}k_{72}k_7 \oplus k_{71}k_7 \oplus k_{72}k_{71}k_7 \oplus k_{70}k_7 \oplus k_{73}k_{71}k_{70}k_7 \oplus k_{72}k_{71}k_{70}k_7 \oplus \\
& k_{69}k_7 \oplus k_{70}k_{69}k_7 \oplus k_{72}k_{70}k_{69}k_7 \oplus k_{71}k_{70}k_{69}k_7 \oplus k_{69}k_{68}k_7 \oplus k_{68}k_{67}k_7 \oplus \\
& k_{63}k_7 \oplus k_{62}k_7 \oplus k_{62}k_{61}k_7 \oplus k_{60}k_7 \oplus k_{75}k_{60}k_7 \oplus k_{74}k_{73}k_{60}k_7 \oplus k_{59}k_7 \oplus \\
& k_{58}k_7 \oplus k_{64}k_{57}k_7 \oplus k_{58}k_{57}k_7 \oplus k_{56}k_7 \oplus k_{74}k_{56}k_7 \oplus k_{73}k_{56}k_7 \oplus \\
& k_{73}k_{71}k_{70}k_{56}k_7 \oplus k_{72}k_{71}k_{70}k_{56}k_7 \oplus k_{59}k_{56}k_7 \oplus k_{57}k_{56}k_7 \oplus k_{58}k_{57}k_{56}k_7 \oplus \\
& k_{55}k_7 \oplus k_{56}k_{55}k_7 \oplus k_{54}k_7 \oplus k_{53}k_7 \oplus k_{51}k_7 \oplus k_{50}k_7 \oplus k_{76}k_{50}k_7 \oplus \\
& k_{75}k_{74}k_{50}k_7 \oplus k_{49}k_7 \oplus k_{77}k_{49}k_7 \oplus k_{76}k_{75}k_{49}k_7 \oplus k_{50}k_{49}k_7 \oplus k_{60}k_{48}k_7 \oplus \\
& k_{56}k_{47}k_7 \oplus k_{46}k_7 \oplus k_{72}k_{46}k_7 \oplus k_{71}k_{70}k_{46}k_7 \oplus k_{56}k_{46}k_7 \oplus k_{72}k_{56}k_{46}k_7 \oplus \\
& k_{71}k_{70}k_{56}k_{46}k_7 \oplus k_{45}k_7 \oplus k_{73}k_{45}k_7 \oplus k_{71}k_{45}k_7 \oplus k_{72}k_{71}k_{45}k_7 \oplus \\
& k_{70}k_{69}k_{45}k_7 \oplus k_{73}k_{56}k_{45}k_7 \oplus k_{72}k_{71}k_{56}k_{45}k_7 \oplus k_{46}k_{45}k_7 \oplus k_{56}k_{46}k_{45}k_7 \oplus \\
& k_{44}k_7 \oplus k_{72}k_{44}k_7 \oplus k_{71}k_{70}k_{44}k_7 \oplus k_{45}k_{44}k_7 \oplus k_{43}k_7 \oplus k_{36}k_7 \oplus k_{32}k_7 \oplus \\
& k_{56}k_{32}k_7 \oplus k_{31}k_7 \oplus k_{13}k_7 \oplus k_6 \oplus k_{74}k_6 \oplus k_{73}k_{72}k_6 \oplus k_{64}k_6 \oplus k_{58}k_6 \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{57}k_6 \oplus k_{47}k_6 \oplus k_5 \oplus k_{57}k_5 \oplus k_{74}k_4 \oplus k_{73}k_{72}k_4 \oplus k_{71}k_4 \oplus k_{70}k_{69}k_4 \oplus \\
& k_{68}k_4 \oplus k_{62}k_4 \oplus k_{59}k_4 \oplus k_{58}k_4 \oplus k_{57}k_4 \oplus k_{58}k_{57}k_4 \oplus k_{47}k_4 \oplus k_{44}k_4 \oplus \\
& k_{57}k_{30}k_4 \oplus k_{57}k_{29}k_{28}k_4 \oplus k_{57}k_5k_4 \oplus k_3 \oplus k_{78}k_3 \oplus k_{76}k_3 \oplus k_{77}k_{76}k_3 \oplus \\
& k_{75}k_{74}k_3 \oplus k_{71}k_3 \oplus k_{69}k_3 \oplus k_{70}k_{69}k_3 \oplus k_{68}k_{67}k_3 \oplus k_{78}k_{58}k_3 \oplus \\
& k_{77}k_{76}k_{58}k_3 \oplus k_{57}k_3 \oplus k_{72}k_{57}k_3 \oplus k_{71}k_{70}k_{57}k_3 \oplus k_{56}k_3 \oplus k_{55}k_3 \oplus \\
& k_{76}k_{55}k_3 \oplus k_{75}k_{74}k_{55}k_3 \oplus k_{56}k_{55}k_3 \oplus k_{51}k_3 \oplus k_{58}k_{51}k_3 \oplus k_{49}k_3 \oplus \\
& k_{55}k_{49}k_3 \oplus k_{57}k_{45}k_3 \oplus k_{44}k_3 \oplus k_{42}k_3 \oplus k_{57}k_{29}k_3 \oplus k_{57}k_{28}k_{27}k_3 \oplus \\
& k_{57}k_4k_3 \oplus k_{57}k_2 \oplus k_{56}k_2 \oplus k_{57}k_{30}k_2 \oplus k_{57}k_{29}k_{28}k_2 \oplus k_{57}k_3k_2 \oplus k_1 \oplus k_0
\end{aligned}$$

#### 4 Superpoly $p_{I_{10}}$

Taking the cube of dimension 77 as

$$I_{10} = \{0, 1, \dots, 72, 73, 75, 77, 79\}, \quad IV[74] = IV[76] = IV[78] = 0,$$

we recover the superpoly  $p_{I_{10}}$  for 842-Round TRIVIUM that has 4174 terms, and we give it as follows

$$\begin{aligned}
p_{I_{10}} = & k_{77}k_{78} \oplus k_{76} \oplus k_{76}k_{77} \oplus k_{76}k_{77}k_{79} \oplus k_{76}k_{77}k_{78} \oplus k_{75}k_{79} \oplus k_{75}k_{78} \oplus \\
& k_{75}k_{77} \oplus k_{75}k_{77}k_{78} \oplus k_{75}k_{76}k_{77} \oplus k_{74} \oplus k_{74}k_{79} \oplus k_{74}k_{76} \oplus k_{74}k_{76}k_{77}k_{79} \oplus \\
& k_{74}k_{76}k_{77}k_{78} \oplus k_{74}k_{75} \oplus k_{74}k_{75}k_{78}k_{79} \oplus k_{74}k_{75}k_{77} \oplus k_{73} \oplus k_{73}k_{78} \oplus \\
& k_{73}k_{78}k_{79} \oplus k_{73}k_{76}k_{77} \oplus k_{73}k_{75}k_{78}k_{79} \oplus k_{73}k_{74}k_{79} \oplus k_{73}k_{74}k_{78} \oplus \\
& k_{73}k_{74}k_{77} \oplus k_{73}k_{74}k_{77}k_{78} \oplus k_{73}k_{74}k_{76} \oplus k_{73}k_{74}k_{76}k_{77} \oplus k_{73}k_{74}k_{75} \oplus \\
& k_{73}k_{74}k_{75}k_{76} \oplus k_{72}k_{78}k_{79} \oplus k_{72}k_{77} \oplus k_{72}k_{76} \oplus k_{72}k_{76}k_{78}k_{79} \oplus k_{72}k_{76}k_{77} \oplus \\
& k_{72}k_{75} \oplus k_{72}k_{75}k_{78}k_{79} \oplus k_{72}k_{74} \oplus k_{72}k_{74}k_{78}k_{79} \oplus k_{72}k_{74}k_{75} \oplus \\
& k_{72}k_{74}k_{75}k_{77} \oplus k_{72}k_{74}k_{75}k_{76} \oplus k_{72}k_{73} \oplus k_{72}k_{73}k_{79} \oplus k_{72}k_{73}k_{78}k_{79} \oplus \\
& k_{72}k_{73}k_{76} \oplus k_{72}k_{73}k_{76}k_{77}k_{79} \oplus k_{72}k_{73}k_{76}k_{77}k_{78} \oplus k_{72}k_{73}k_{75}k_{78}k_{79} \oplus \\
& k_{72}k_{73}k_{75}k_{76} \oplus k_{72}k_{73}k_{74} \oplus k_{72}k_{73}k_{74}k_{78}k_{79} \oplus k_{72}k_{73}k_{74}k_{76} \oplus \\
& k_{72}k_{73}k_{74}k_{75} \oplus k_{71} \oplus k_{71}k_{74} \oplus k_{71}k_{73} \oplus k_{71}k_{72} \oplus k_{71}k_{72}k_{78} \oplus \\
& k_{71}k_{72}k_{78}k_{79} \oplus k_{71}k_{72}k_{76}k_{77} \oplus k_{71}k_{72}k_{75} \oplus k_{71}k_{72}k_{73} \oplus k_{71}k_{72}k_{73}k_{74} \oplus \\
& k_{70} \oplus k_{70}k_{74} \oplus k_{70}k_{72}k_{73} \oplus k_{70}k_{71}k_{78}k_{79} \oplus k_{70}k_{71}k_{77} \oplus k_{70}k_{71}k_{76} \oplus \\
& k_{70}k_{71}k_{76}k_{78}k_{79} \oplus k_{70}k_{71}k_{76}k_{77} \oplus k_{70}k_{71}k_{75}k_{78}k_{79} \oplus k_{70}k_{71}k_{74} \oplus \\
& k_{70}k_{71}k_{74}k_{78}k_{79} \oplus k_{70}k_{71}k_{74}k_{75} \oplus k_{70}k_{71}k_{74}k_{75}k_{77} \oplus k_{70}k_{71}k_{74}k_{75}k_{76} \oplus \\
& k_{70}k_{71}k_{73} \oplus k_{70}k_{71}k_{73}k_{75}k_{78}k_{79} \oplus k_{70}k_{71}k_{73}k_{74}k_{78}k_{79} \oplus k_{70}k_{71}k_{72} \oplus \\
& k_{70}k_{71}k_{72}k_{75}k_{78}k_{79} \oplus k_{70}k_{71}k_{72}k_{73} \oplus k_{70}k_{71}k_{72}k_{73}k_{78}k_{79} \oplus \\
& k_{70}k_{71}k_{72}k_{73}k_{75}k_{78}k_{79} \oplus k_{69} \oplus k_{69}k_{75} \oplus k_{69}k_{73} \oplus k_{69}k_{73}k_{74} \oplus k_{69}k_{71}k_{72} \oplus \\
& k_{69}k_{70} \oplus k_{69}k_{70}k_{74} \oplus k_{69}k_{70}k_{73} \oplus k_{69}k_{70}k_{72}k_{75} \oplus k_{69}k_{70}k_{72}k_{73} \oplus \\
& k_{69}k_{70}k_{72}k_{73}k_{74} \oplus k_{69}k_{70}k_{71}k_{75} \oplus k_{69}k_{70}k_{71}k_{73}k_{74} \oplus k_{69}k_{70}k_{71}k_{72} \oplus k_{68} \oplus \\
& k_{68}k_{74}k_{79} \oplus k_{68}k_{74}k_{77}k_{78} \oplus k_{68}k_{72}k_{73}k_{79} \oplus k_{68}k_{72}k_{73}k_{77}k_{78} \oplus k_{68}k_{69} \oplus
\end{aligned}$$



$$\begin{aligned}
& k_{68}k_{69}k_{74} \oplus k_{68}k_{69}k_{72}k_{73} \oplus k_{67}k_{79} \oplus k_{67}k_{77}k_{78} \oplus k_{67}k_{68} \oplus k_{67}k_{68}k_{75} \oplus \\
& k_{67}k_{68}k_{73} \oplus k_{67}k_{68}k_{73}k_{74} \oplus k_{67}k_{68}k_{71}k_{72} \oplus k_{66} \oplus k_{66}k_{78} \oplus k_{66}k_{77} \oplus \\
& k_{66}k_{76}k_{77} \oplus k_{66}k_{75} \oplus k_{66}k_{75}k_{76} \oplus k_{66}k_{74} \oplus k_{66}k_{73}k_{74} \oplus k_{66}k_{72}k_{73} \oplus \\
& k_{66}k_{67} \oplus k_{65}k_{79} \oplus k_{65}k_{78}k_{79} \oplus k_{65}k_{77}k_{78} \oplus k_{65}k_{74} \oplus k_{65}k_{72}k_{73} \oplus k_{64}k_{77} \oplus \\
& k_{64}k_{76} \oplus k_{64}k_{75} \oplus k_{64}k_{75}k_{76} \oplus k_{64}k_{74}k_{75} \oplus k_{64}k_{73}k_{74} \oplus k_{64}k_{72} \oplus \\
& k_{64}k_{72}k_{73} \oplus k_{64}k_{71}k_{73} \oplus k_{64}k_{70}k_{71} \oplus k_{64}k_{70}k_{71}k_{73} \oplus k_{64}k_{70}k_{71}k_{72} \oplus \\
& k_{64}k_{69}k_{74} \oplus k_{64}k_{69}k_{71}k_{72} \oplus k_{64}k_{69}k_{70}k_{73} \oplus k_{64}k_{69}k_{70}k_{71}k_{73} \oplus k_{64}k_{67} \oplus \\
& k_{64}k_{67}k_{68}k_{74} \oplus k_{64}k_{67}k_{68}k_{71}k_{72} \oplus k_{64}k_{67}k_{68}k_{70}k_{71}k_{73} \oplus \\
& k_{64}k_{67}k_{68}k_{70}k_{71}k_{72} \oplus k_{64}k_{65} \oplus k_{64}k_{65}k_{78} \oplus k_{64}k_{65}k_{77} \oplus k_{64}k_{65}k_{76}k_{77} \oplus \\
& k_{64}k_{65}k_{75}k_{76} \oplus k_{63} \oplus k_{63}k_{78} \oplus k_{63}k_{76}k_{77} \oplus k_{63}k_{74} \oplus k_{63}k_{72} \oplus k_{63}k_{72}k_{73} \oplus \\
& k_{63}k_{70}k_{71} \oplus k_{63}k_{69} \oplus k_{63}k_{68} \oplus k_{63}k_{67}k_{68} \oplus k_{63}k_{66} \oplus k_{63}k_{64} \oplus k_{63}k_{64}k_{79} \oplus \\
& k_{63}k_{64}k_{78}k_{79} \oplus k_{63}k_{64}k_{77}k_{78} \oplus k_{63}k_{64}k_{74} \oplus k_{63}k_{64}k_{72}k_{73} \oplus k_{63}k_{64}k_{66}k_{79} \oplus \\
& k_{63}k_{64}k_{66}k_{77}k_{78} \oplus k_{63}k_{64}k_{66}k_{74} \oplus k_{63}k_{64}k_{66}k_{72}k_{73} \oplus k_{63}k_{64}k_{65}k_{79} \oplus \\
& k_{63}k_{64}k_{65}k_{77}k_{78} \oplus k_{63}k_{64}k_{65}k_{74} \oplus k_{63}k_{64}k_{65}k_{72}k_{73} \oplus k_{62} \oplus k_{62}k_{79} \oplus \\
& k_{62}k_{78} \oplus k_{62}k_{77}k_{78} \oplus k_{62}k_{76} \oplus k_{62}k_{76}k_{77} \oplus k_{62}k_{75} \oplus k_{62}k_{74}k_{75} \oplus k_{62}k_{73} \oplus \\
& k_{62}k_{73}k_{74} \oplus k_{62}k_{71}k_{72} \oplus k_{62}k_{69} \oplus k_{62}k_{67}k_{68} \oplus k_{62}k_{66} \oplus k_{62}k_{64} \oplus k_{61} \oplus \\
& k_{61}k_{76} \oplus k_{61}k_{76}k_{77} \oplus k_{61}k_{75} \oplus k_{61}k_{74} \oplus k_{61}k_{74}k_{78} \oplus k_{61}k_{74}k_{76}k_{77} \oplus \\
& k_{61}k_{74}k_{75}k_{77} \oplus k_{61}k_{74}k_{75}k_{76} \oplus k_{61}k_{73}k_{78} \oplus k_{61}k_{73}k_{77} \oplus k_{61}k_{73}k_{76} \oplus \\
& k_{61}k_{73}k_{74} \oplus k_{61}k_{73}k_{74}k_{76} \oplus k_{61}k_{73}k_{74}k_{75}k_{77} \oplus k_{61}k_{73}k_{74}k_{75}k_{76} \oplus \\
& k_{61}k_{72}k_{78}k_{79} \oplus k_{61}k_{72}k_{73} \oplus k_{61}k_{72}k_{73}k_{78} \oplus k_{61}k_{72}k_{73}k_{76}k_{77} \oplus k_{61}k_{71} \oplus \\
& k_{61}k_{71}k_{72}k_{78} \oplus k_{61}k_{71}k_{72}k_{77} \oplus k_{61}k_{71}k_{72}k_{76} \oplus k_{61}k_{71}k_{72}k_{74}k_{75} \oplus \\
& k_{61}k_{71}k_{72}k_{74}k_{75}k_{77} \oplus k_{61}k_{71}k_{72}k_{74}k_{75}k_{76} \oplus k_{61}k_{70}k_{71}k_{78}k_{79} \oplus k_{61}k_{69} \oplus \\
& k_{61}k_{69}k_{70} \oplus k_{61}k_{68} \oplus k_{61}k_{67}k_{68} \oplus k_{61}k_{66}k_{67} \oplus k_{61}k_{64} \oplus k_{61}k_{64}k_{73} \oplus \\
& k_{61}k_{64}k_{72} \oplus k_{61}k_{64}k_{72}k_{73} \oplus k_{61}k_{64}k_{71}k_{73} \oplus k_{61}k_{64}k_{71}k_{72} \oplus k_{61}k_{64}k_{70}k_{71} \oplus \\
& k_{61}k_{64}k_{70}k_{71}k_{73} \oplus k_{61}k_{64}k_{70}k_{71}k_{72} \oplus k_{61}k_{64}k_{69} \oplus k_{61}k_{64}k_{69}k_{74} \oplus \\
& k_{61}k_{64}k_{69}k_{73} \oplus k_{61}k_{64}k_{69}k_{72} \oplus k_{61}k_{64}k_{69}k_{70}k_{73} \oplus k_{61}k_{64}k_{69}k_{70}k_{71} \oplus \\
& k_{61}k_{64}k_{69}k_{70}k_{71}k_{73} \oplus k_{61}k_{64}k_{67}k_{68} \oplus k_{61}k_{64}k_{67}k_{68}k_{74} \oplus \\
& k_{61}k_{64}k_{67}k_{68}k_{73} \oplus k_{61}k_{64}k_{67}k_{68}k_{72} \oplus k_{61}k_{64}k_{67}k_{68}k_{70}k_{71} \oplus \\
& k_{61}k_{64}k_{67}k_{68}k_{70}k_{71}k_{73} \oplus k_{61}k_{64}k_{67}k_{68}k_{70}k_{71}k_{72} \oplus k_{61}k_{63} \oplus k_{61}k_{63}k_{73} \oplus \\
& k_{61}k_{63}k_{71}k_{72} \oplus k_{61}k_{62} \oplus k_{61}k_{62}k_{78} \oplus k_{61}k_{62}k_{76}k_{77} \oplus k_{61}k_{62}k_{74} \oplus \\
& k_{61}k_{62}k_{73} \oplus k_{61}k_{62}k_{72} \oplus k_{61}k_{62}k_{72}k_{73} \oplus k_{61}k_{62}k_{71}k_{72} \oplus k_{61}k_{62}k_{70}k_{71} \oplus \\
& k_{61}k_{62}k_{68} \oplus k_{61}k_{62}k_{64}k_{66} \oplus k_{61}k_{62}k_{64}k_{65} \oplus k_{60} \oplus k_{60}k_{78} \oplus k_{60}k_{77} \oplus \\
& k_{60}k_{76} \oplus k_{60}k_{76}k_{77} \oplus k_{60}k_{75} \oplus k_{60}k_{75}k_{76} \oplus k_{60}k_{74}k_{78} \oplus k_{60}k_{74}k_{76}k_{77} \oplus \\
& k_{60}k_{74}k_{75} \oplus k_{60}k_{73} \oplus k_{60}k_{73}k_{74} \oplus k_{60}k_{72} \oplus k_{60}k_{72}k_{73}k_{78} \oplus \\
& k_{60}k_{72}k_{73}k_{76}k_{77} \oplus k_{60}k_{71} \oplus k_{60}k_{71}k_{73} \oplus k_{60}k_{70}k_{71} \oplus k_{60}k_{69} \oplus k_{60}k_{69}k_{72} \oplus \\
& k_{60}k_{69}k_{70} \oplus k_{60}k_{69}k_{70}k_{73} \oplus k_{60}k_{69}k_{70}k_{71} \oplus k_{60}k_{69}k_{70}k_{71}k_{72} \oplus k_{60}k_{67} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{60}k_{67}k_{68} \oplus k_{60}k_{67}k_{68}k_{72} \oplus k_{60}k_{67}k_{68}k_{70}k_{71} \oplus k_{60}k_{66} \oplus k_{60}k_{66}k_{76} \oplus \\
& k_{60}k_{66}k_{74} \oplus k_{60}k_{66}k_{74}k_{75} \oplus k_{60}k_{66}k_{72}k_{73} \oplus k_{60}k_{64} \oplus k_{60}k_{64}k_{72} \oplus \\
& k_{60}k_{64}k_{71} \oplus k_{60}k_{64}k_{71}k_{73} \oplus k_{60}k_{64}k_{71}k_{72} \oplus k_{60}k_{64}k_{70}k_{71} \oplus k_{60}k_{64}k_{69} \oplus \\
& k_{60}k_{64}k_{69}k_{72} \oplus k_{60}k_{64}k_{69}k_{70} \oplus k_{60}k_{64}k_{69}k_{70}k_{73} \oplus k_{60}k_{64}k_{69}k_{70}k_{71} \oplus \\
& k_{60}k_{64}k_{69}k_{70}k_{71}k_{72} \oplus k_{60}k_{64}k_{67}k_{68} \oplus k_{60}k_{64}k_{67}k_{68}k_{72} \oplus \\
& k_{60}k_{64}k_{67}k_{68}k_{70}k_{71} \oplus k_{60}k_{64}k_{65}k_{76} \oplus k_{60}k_{64}k_{65}k_{74} \oplus k_{60}k_{64}k_{65}k_{74}k_{75} \oplus \\
& k_{60}k_{64}k_{65}k_{72}k_{73} \oplus k_{60}k_{63}k_{64}k_{66} \oplus k_{60}k_{63}k_{64}k_{65} \oplus k_{60}k_{62} \oplus k_{60}k_{61}k_{76} \oplus \\
& k_{60}k_{61}k_{75} \oplus k_{60}k_{61}k_{74}k_{75} \oplus k_{60}k_{61}k_{73}k_{74} \oplus k_{60}k_{61}k_{64} \oplus k_{59}k_{76} \oplus k_{59}k_{75} \oplus \\
& k_{59}k_{75}k_{78}k_{79} \oplus k_{59}k_{74} \oplus k_{59}k_{74}k_{75} \oplus k_{59}k_{73}k_{74} \oplus k_{59}k_{73}k_{74}k_{78}k_{79} \oplus \\
& k_{59}k_{72}k_{73} \oplus k_{59}k_{71} \oplus k_{59}k_{71}k_{72} \oplus k_{59}k_{70}k_{71} \oplus k_{59}k_{69}k_{70} \oplus k_{59}k_{69}k_{70}k_{72} \oplus \\
& k_{59}k_{69}k_{70}k_{71} \oplus k_{59}k_{67} \oplus k_{59}k_{66} \oplus k_{59}k_{64} \oplus k_{59}k_{64}k_{71}k_{73} \oplus k_{59}k_{64}k_{71}k_{72} \oplus \\
& k_{59}k_{64}k_{69} \oplus k_{59}k_{64}k_{69}k_{70}k_{73} \oplus k_{59}k_{64}k_{69}k_{70}k_{71}k_{72} \oplus k_{59}k_{64}k_{67}k_{68} \oplus \\
& k_{59}k_{61} \oplus k_{59}k_{61}k_{64}k_{73} \oplus k_{59}k_{61}k_{64}k_{71}k_{72} \oplus k_{59}k_{61}k_{64}k_{69} \oplus \\
& k_{59}k_{61}k_{64}k_{67}k_{68} \oplus k_{59}k_{60}k_{76} \oplus k_{59}k_{60}k_{76}k_{77} \oplus k_{59}k_{60}k_{75} \oplus k_{59}k_{60}k_{74}k_{78} \oplus \\
& k_{59}k_{60}k_{74}k_{76}k_{77} \oplus k_{59}k_{60}k_{74}k_{75}k_{77} \oplus k_{59}k_{60}k_{74}k_{75}k_{76} \oplus k_{59}k_{60}k_{73} \oplus \\
& k_{59}k_{60}k_{73}k_{78} \oplus k_{59}k_{60}k_{73}k_{77} \oplus k_{59}k_{60}k_{73}k_{76} \oplus k_{59}k_{60}k_{73}k_{74} \oplus \\
& k_{59}k_{60}k_{73}k_{74}k_{76} \oplus k_{59}k_{60}k_{73}k_{74}k_{75}k_{77} \oplus k_{59}k_{60}k_{73}k_{74}k_{75}k_{76} \oplus \\
& k_{59}k_{60}k_{72}k_{78}k_{79} \oplus k_{59}k_{60}k_{72}k_{73}k_{78} \oplus k_{59}k_{60}k_{72}k_{73}k_{76}k_{77} \oplus k_{59}k_{60}k_{71} \oplus \\
& k_{59}k_{60}k_{71}k_{72} \oplus k_{59}k_{60}k_{71}k_{72}k_{78} \oplus k_{59}k_{60}k_{71}k_{72}k_{77} \oplus k_{59}k_{60}k_{71}k_{72}k_{76} \oplus \\
& k_{59}k_{60}k_{71}k_{72}k_{74}k_{75} \oplus k_{59}k_{60}k_{71}k_{72}k_{74}k_{75}k_{77} \oplus k_{59}k_{60}k_{71}k_{72}k_{74}k_{75}k_{76} \oplus \\
& k_{59}k_{60}k_{70}k_{71}k_{78}k_{79} \oplus k_{59}k_{60}k_{69}k_{70} \oplus k_{59}k_{60}k_{64}k_{72} \oplus k_{59}k_{60}k_{64}k_{72}k_{73} \oplus \\
& k_{59}k_{60}k_{64}k_{71} \oplus k_{59}k_{60}k_{64}k_{71}k_{72} \oplus k_{59}k_{60}k_{64}k_{70}k_{71} \oplus \\
& k_{59}k_{60}k_{64}k_{70}k_{71}k_{73} \oplus k_{59}k_{60}k_{64}k_{70}k_{71}k_{72} \oplus k_{59}k_{60}k_{64}k_{69}k_{74} \oplus \\
& k_{59}k_{60}k_{64}k_{69}k_{73} \oplus k_{59}k_{60}k_{64}k_{69}k_{72} \oplus k_{59}k_{60}k_{64}k_{69}k_{70} \oplus \\
& k_{59}k_{60}k_{64}k_{69}k_{70}k_{71} \oplus k_{59}k_{60}k_{64}k_{69}k_{70}k_{71}k_{73} \oplus k_{59}k_{60}k_{64}k_{69}k_{70}k_{71}k_{72} \oplus \\
& k_{59}k_{60}k_{64}k_{67}k_{68}k_{74} \oplus k_{59}k_{60}k_{64}k_{67}k_{68}k_{73} \oplus k_{59}k_{60}k_{64}k_{67}k_{68}k_{72} \oplus \\
& k_{59}k_{60}k_{64}k_{67}k_{68}k_{70}k_{71} \oplus k_{59}k_{60}k_{64}k_{67}k_{68}k_{70}k_{71}k_{73} \oplus \\
& k_{59}k_{60}k_{64}k_{67}k_{68}k_{70}k_{71}k_{72} \oplus k_{59}k_{60}k_{63} \oplus k_{59}k_{60}k_{63}k_{73} \oplus \\
& k_{59}k_{60}k_{63}k_{71}k_{72} \oplus k_{59}k_{60}k_{61}k_{62} \oplus k_{59}k_{60}k_{61}k_{62}k_{73} \oplus \\
& k_{59}k_{60}k_{61}k_{62}k_{71}k_{72} \oplus k_{58} \oplus k_{58}k_{77} \oplus k_{58}k_{74}k_{75} \oplus k_{58}k_{73}k_{74}k_{76} \oplus \\
& k_{58}k_{73}k_{74}k_{75} \oplus k_{58}k_{72}k_{78} \oplus k_{58}k_{72}k_{77} \oplus k_{58}k_{72}k_{76} \oplus k_{58}k_{72}k_{76}k_{78} \oplus \\
& k_{58}k_{72}k_{76}k_{77} \oplus k_{58}k_{72}k_{74}k_{75} \oplus k_{58}k_{72}k_{74}k_{75}k_{78} \oplus k_{58}k_{72}k_{74}k_{75}k_{77} \oplus \\
& k_{58}k_{72}k_{74}k_{75}k_{76} \oplus k_{58}k_{72}k_{74}k_{75}k_{76}k_{77} \oplus k_{58}k_{70}k_{71}k_{78} \oplus k_{58}k_{70}k_{71}k_{77} \oplus \\
& k_{58}k_{70}k_{71}k_{76} \oplus k_{58}k_{70}k_{71}k_{76}k_{78} \oplus k_{58}k_{70}k_{71}k_{76}k_{77} \oplus k_{58}k_{70}k_{71}k_{74}k_{75} \oplus \\
& k_{58}k_{70}k_{71}k_{74}k_{75}k_{78} \oplus k_{58}k_{70}k_{71}k_{74}k_{75}k_{77} \oplus k_{58}k_{70}k_{71}k_{74}k_{75}k_{76} \oplus \\
& k_{58}k_{70}k_{71}k_{74}k_{75}k_{76}k_{77} \oplus k_{58}k_{65} \oplus k_{58}k_{64}k_{73} \oplus k_{58}k_{64}k_{71}k_{72} \oplus k_{58}k_{63}k_{72} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{58}k_{63}k_{70}k_{71} \oplus k_{58}k_{63}k_{64} \oplus k_{58}k_{62} \oplus k_{58}k_{61}k_{64} \oplus k_{58}k_{61}k_{64}k_{73} \oplus \\
& k_{58}k_{61}k_{64}k_{71}k_{72} \oplus k_{58}k_{61}k_{62}k_{72} \oplus k_{58}k_{61}k_{62}k_{70}k_{71} \oplus k_{58}k_{60}k_{73} \oplus \\
& k_{58}k_{60}k_{71}k_{72} \oplus k_{58}k_{60}k_{64} \oplus k_{58}k_{60}k_{64}k_{73} \oplus k_{58}k_{60}k_{64}k_{71}k_{72} \oplus k_{58}k_{60}k_{61} \oplus \\
& k_{58}k_{59} \oplus k_{58}k_{59}k_{75} \oplus k_{58}k_{59}k_{73} \oplus k_{58}k_{59}k_{73}k_{74} \oplus k_{58}k_{59}k_{72} \oplus k_{58}k_{59}k_{71} \oplus \\
& k_{58}k_{59}k_{71}k_{73} \oplus k_{58}k_{59}k_{70}k_{71} \oplus k_{58}k_{59}k_{69} \oplus k_{58}k_{59}k_{69}k_{72} \oplus k_{58}k_{59}k_{69}k_{70} \oplus \\
& k_{58}k_{59}k_{69}k_{70}k_{73} \oplus k_{58}k_{59}k_{69}k_{70}k_{71} \oplus k_{58}k_{59}k_{69}k_{70}k_{71}k_{72} \oplus \\
& k_{58}k_{59}k_{67}k_{68} \oplus k_{58}k_{59}k_{67}k_{68}k_{72} \oplus k_{58}k_{59}k_{67}k_{68}k_{70}k_{71} \oplus k_{58}k_{59}k_{66} \oplus \\
& k_{58}k_{59}k_{65} \oplus k_{58}k_{59}k_{64}k_{73} \oplus k_{58}k_{59}k_{64}k_{72} \oplus k_{58}k_{59}k_{64}k_{71}k_{72} \oplus \\
& k_{58}k_{59}k_{64}k_{70}k_{71} \oplus k_{58}k_{59}k_{64}k_{69} \oplus k_{58}k_{59}k_{64}k_{69}k_{72} \oplus \\
& k_{58}k_{59}k_{64}k_{69}k_{70}k_{71} \oplus k_{58}k_{59}k_{64}k_{67}k_{68} \oplus k_{58}k_{59}k_{64}k_{67}k_{68}k_{72} \oplus \\
& k_{58}k_{59}k_{64}k_{67}k_{68}k_{70}k_{71} \oplus k_{58}k_{59}k_{64}k_{65} \oplus k_{58}k_{59}k_{63}k_{64} \oplus k_{58}k_{59}k_{61} \oplus \\
& k_{58}k_{59}k_{61}k_{73} \oplus k_{58}k_{59}k_{61}k_{71}k_{72} \oplus k_{58}k_{59}k_{60}k_{73} \oplus k_{58}k_{59}k_{60}k_{71}k_{72} \oplus \\
& k_{58}k_{59}k_{60}k_{64} \oplus k_{57} \oplus k_{57}k_{77} \oplus k_{57}k_{75}k_{76} \oplus k_{57}k_{74} \oplus k_{57}k_{74}k_{75} \oplus k_{57}k_{73} \oplus \\
& k_{57}k_{73}k_{74} \oplus k_{57}k_{72}k_{73} \oplus k_{57}k_{72}k_{73}k_{75} \oplus k_{57}k_{72}k_{73}k_{74} \oplus k_{57}k_{71}k_{72} \oplus \\
& k_{57}k_{64} \oplus k_{57}k_{64}k_{75} \oplus k_{57}k_{64}k_{74} \oplus k_{57}k_{64}k_{73} \oplus k_{57}k_{64}k_{73}k_{74} \oplus \\
& k_{57}k_{64}k_{70}k_{71}k_{73} \oplus k_{57}k_{64}k_{70}k_{71}k_{72} \oplus k_{57}k_{63} \oplus k_{57}k_{61} \oplus k_{57}k_{61}k_{64}k_{74} \oplus \\
& k_{57}k_{61}k_{64}k_{72} \oplus k_{57}k_{61}k_{64}k_{71}k_{72} \oplus k_{57}k_{61}k_{64}k_{70}k_{71} \oplus \\
& k_{57}k_{61}k_{64}k_{70}k_{71}k_{73} \oplus k_{57}k_{61}k_{64}k_{70}k_{71}k_{72} \oplus k_{57}k_{60} \oplus k_{57}k_{60}k_{73} \oplus \\
& k_{57}k_{60}k_{72} \oplus k_{57}k_{60}k_{71}k_{72} \oplus k_{57}k_{60}k_{70}k_{71} \oplus k_{57}k_{60}k_{64}k_{73} \oplus k_{57}k_{60}k_{64}k_{72} \oplus \\
& k_{57}k_{60}k_{64}k_{71}k_{72} \oplus k_{57}k_{60}k_{64}k_{70}k_{71} \oplus k_{57}k_{60}k_{61} \oplus k_{57}k_{59}k_{64}k_{73} \oplus \\
& k_{57}k_{59}k_{64}k_{71}k_{72} \oplus k_{57}k_{59}k_{61}k_{64} \oplus k_{57}k_{59}k_{60} \oplus k_{57}k_{59}k_{60}k_{64} \oplus \\
& k_{57}k_{59}k_{60}k_{64}k_{74} \oplus k_{57}k_{59}k_{60}k_{64}k_{73} \oplus k_{57}k_{59}k_{60}k_{64}k_{72} \oplus \\
& k_{57}k_{59}k_{60}k_{64}k_{70}k_{71} \oplus k_{57}k_{59}k_{60}k_{64}k_{70}k_{71}k_{73} \oplus k_{57}k_{59}k_{60}k_{64}k_{70}k_{71}k_{72} \oplus \\
& k_{57}k_{58}k_{76} \oplus k_{57}k_{58}k_{75} \oplus k_{57}k_{58}k_{75}k_{78}k_{79} \oplus k_{57}k_{58}k_{74} \oplus k_{57}k_{58}k_{74}k_{75} \oplus \\
& k_{57}k_{58}k_{73} \oplus k_{57}k_{58}k_{73}k_{74} \oplus k_{57}k_{58}k_{73}k_{74}k_{78}k_{79} \oplus k_{57}k_{58}k_{72} \oplus \\
& k_{57}k_{58}k_{72}k_{73} \oplus k_{57}k_{58}k_{71}k_{72} \oplus k_{57}k_{58}k_{70}k_{71} \oplus k_{57}k_{58}k_{64}k_{71}k_{73} \oplus \\
& k_{57}k_{58}k_{64}k_{71}k_{72} \oplus k_{57}k_{58}k_{64}k_{69} \oplus k_{57}k_{58}k_{64}k_{69}k_{70}k_{73} \oplus \\
& k_{57}k_{58}k_{64}k_{69}k_{70}k_{71}k_{72} \oplus k_{57}k_{58}k_{64}k_{67}k_{68} \oplus k_{57}k_{58}k_{61} \oplus k_{57}k_{58}k_{61}k_{64} \oplus \\
& k_{57}k_{58}k_{61}k_{64}k_{73} \oplus k_{57}k_{58}k_{61}k_{64}k_{71}k_{72} \oplus k_{57}k_{58}k_{61}k_{64}k_{69} \oplus \\
& k_{57}k_{58}k_{61}k_{64}k_{67}k_{68} \oplus k_{57}k_{58}k_{60} \oplus k_{57}k_{58}k_{60}k_{73} \oplus k_{57}k_{58}k_{60}k_{71}k_{72} \oplus \\
& k_{57}k_{58}k_{60}k_{64} \oplus k_{57}k_{58}k_{60}k_{64}k_{71} \oplus k_{57}k_{58}k_{60}k_{64}k_{71}k_{73} \oplus \\
& k_{57}k_{58}k_{60}k_{64}k_{71}k_{72} \oplus k_{57}k_{58}k_{60}k_{64}k_{69}k_{70} \oplus k_{57}k_{58}k_{60}k_{64}k_{69}k_{70}k_{73} \oplus \\
& k_{57}k_{58}k_{60}k_{64}k_{69}k_{70}k_{71}k_{72} \oplus k_{57}k_{58}k_{59} \oplus k_{57}k_{58}k_{59}k_{64} \oplus \\
& k_{57}k_{58}k_{59}k_{64}k_{72} \oplus k_{57}k_{58}k_{59}k_{64}k_{71} \oplus k_{57}k_{58}k_{59}k_{64}k_{71}k_{73} \oplus \\
& k_{57}k_{58}k_{59}k_{64}k_{71}k_{72} \oplus k_{57}k_{58}k_{59}k_{64}k_{70}k_{71} \oplus k_{57}k_{58}k_{59}k_{64}k_{69}k_{70} \oplus \\
& k_{57}k_{58}k_{59}k_{64}k_{69}k_{70}k_{73} \oplus k_{57}k_{58}k_{59}k_{64}k_{69}k_{70}k_{71}k_{72} \oplus k_{57}k_{58}k_{59}k_{60} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{57}k_{58}k_{59}k_{60}k_{64} \oplus k_{57}k_{58}k_{59}k_{60}k_{64}k_{73} \oplus k_{57}k_{58}k_{59}k_{60}k_{64}k_{71}k_{72} \oplus \\
& k_{57}k_{58}k_{59}k_{60}k_{64}k_{69} \oplus k_{57}k_{58}k_{59}k_{60}k_{64}k_{67}k_{68} \oplus k_{56}k_{78} \oplus k_{56}k_{76} \oplus \\
& k_{56}k_{76}k_{77} \oplus k_{56}k_{75}k_{78}k_{79} \oplus k_{56}k_{74}k_{78} \oplus k_{56}k_{74}k_{76}k_{77} \oplus k_{56}k_{74}k_{75} \oplus \\
& k_{56}k_{73} \oplus k_{56}k_{73}k_{78}k_{79} \oplus k_{56}k_{73}k_{74}k_{78}k_{79} \oplus k_{56}k_{72} \oplus k_{56}k_{72}k_{78} \oplus \\
& k_{56}k_{72}k_{78}k_{79} \oplus k_{56}k_{72}k_{77} \oplus k_{56}k_{72}k_{76} \oplus k_{56}k_{72}k_{76}k_{78} \oplus k_{56}k_{72}k_{76}k_{77} \oplus \\
& k_{56}k_{72}k_{74}k_{75} \oplus k_{56}k_{72}k_{74}k_{75}k_{78} \oplus k_{56}k_{72}k_{74}k_{75}k_{77} \oplus k_{56}k_{72}k_{74}k_{75}k_{76} \oplus \\
& k_{56}k_{72}k_{74}k_{75}k_{76}k_{77} \oplus k_{56}k_{72}k_{73} \oplus k_{56}k_{72}k_{73}k_{78} \oplus k_{56}k_{72}k_{73}k_{76}k_{77} \oplus \\
& k_{56}k_{71}k_{72}k_{78}k_{79} \oplus k_{56}k_{70}k_{71} \oplus k_{56}k_{70}k_{71}k_{78} \oplus k_{56}k_{70}k_{71}k_{78}k_{79} \oplus \\
& k_{56}k_{70}k_{71}k_{77} \oplus k_{56}k_{70}k_{71}k_{76} \oplus k_{56}k_{70}k_{71}k_{76}k_{78} \oplus k_{56}k_{70}k_{71}k_{76}k_{77} \oplus \\
& k_{56}k_{70}k_{71}k_{74}k_{75} \oplus k_{56}k_{70}k_{71}k_{74}k_{75}k_{78} \oplus k_{56}k_{70}k_{71}k_{74}k_{75}k_{77} \oplus \\
& k_{56}k_{70}k_{71}k_{74}k_{75}k_{76} \oplus k_{56}k_{70}k_{71}k_{74}k_{75}k_{76}k_{77} \oplus k_{56}k_{70}k_{71}k_{73} \oplus \\
& k_{56}k_{70}k_{71}k_{72} \oplus k_{56}k_{64}k_{75} \oplus k_{56}k_{64}k_{73}k_{74} \oplus k_{56}k_{64}k_{72}k_{73} \oplus k_{56}k_{64}k_{71}k_{72} \oplus \\
& k_{56}k_{64}k_{70}k_{71}k_{73} \oplus k_{56}k_{64}k_{70}k_{71}k_{72} \oplus k_{56}k_{63} \oplus k_{56}k_{63}k_{72} \oplus k_{56}k_{63}k_{70}k_{71} \oplus \\
& k_{56}k_{62} \oplus k_{56}k_{61}k_{64}k_{74} \oplus k_{56}k_{61}k_{64}k_{73} \oplus k_{56}k_{61}k_{64}k_{72} \oplus k_{56}k_{61}k_{64}k_{70}k_{71} \oplus \\
& k_{56}k_{61}k_{64}k_{70}k_{71}k_{73} \oplus k_{56}k_{61}k_{64}k_{70}k_{71}k_{72} \oplus k_{56}k_{61}k_{62}k_{72} \oplus \\
& k_{56}k_{61}k_{62}k_{70}k_{71} \oplus k_{56}k_{60} \oplus k_{56}k_{60}k_{72} \oplus k_{56}k_{60}k_{70}k_{71} \oplus k_{56}k_{60}k_{64} \oplus \\
& k_{56}k_{60}k_{64}k_{72} \oplus k_{56}k_{60}k_{64}k_{70}k_{71} \oplus k_{56}k_{59}k_{78}k_{79} \oplus k_{56}k_{59}k_{64} \oplus \\
& k_{56}k_{59}k_{61}k_{64} \oplus k_{56}k_{59}k_{60} \oplus k_{56}k_{59}k_{60}k_{64} \oplus k_{56}k_{59}k_{60}k_{64}k_{74} \oplus \\
& k_{56}k_{59}k_{60}k_{64}k_{73} \oplus k_{56}k_{59}k_{60}k_{64}k_{72} \oplus k_{56}k_{59}k_{60}k_{64}k_{70}k_{71} \oplus \\
& k_{56}k_{59}k_{60}k_{64}k_{70}k_{71}k_{73} \oplus k_{56}k_{59}k_{60}k_{64}k_{70}k_{71}k_{72} \oplus k_{56}k_{58}k_{59} \oplus \\
& k_{56}k_{58}k_{59}k_{72} \oplus k_{56}k_{58}k_{59}k_{70}k_{71} \oplus k_{56}k_{58}k_{59}k_{64} \oplus k_{56}k_{58}k_{59}k_{64}k_{72} \oplus \\
& k_{56}k_{58}k_{59}k_{64}k_{70}k_{71} \oplus k_{56}k_{57}k_{75} \oplus k_{56}k_{57}k_{74} \oplus k_{56}k_{57}k_{73}k_{74} \oplus \\
& k_{56}k_{57}k_{72}k_{73} \oplus k_{56}k_{57}k_{58} \oplus k_{56}k_{57}k_{58}k_{64} \oplus k_{56}k_{57}k_{58}k_{61}k_{64} \oplus \\
& k_{56}k_{57}k_{58}k_{59}k_{60}k_{64} \oplus k_{55} \oplus k_{55}k_{78} \oplus k_{55}k_{76}k_{77} \oplus k_{55}k_{75}k_{78}k_{79} \oplus k_{55}k_{74} \oplus \\
& k_{55}k_{74}k_{75} \oplus k_{55}k_{73} \oplus k_{55}k_{73}k_{75} \oplus k_{55}k_{73}k_{74}k_{78}k_{79} \oplus k_{55}k_{72}k_{73} \oplus \\
& k_{55}k_{72}k_{73}k_{75} \oplus k_{55}k_{72}k_{73}k_{74} \oplus k_{55}k_{71}k_{75} \oplus k_{55}k_{71}k_{73}k_{74} \oplus k_{55}k_{71}k_{72} \oplus \\
& k_{55}k_{70}k_{71}k_{75} \oplus k_{55}k_{70}k_{71}k_{73}k_{74} \oplus k_{55}k_{69}k_{70}k_{75} \oplus k_{55}k_{69}k_{70}k_{73}k_{74} \oplus \\
& k_{55}k_{69}k_{70}k_{72}k_{75} \oplus k_{55}k_{69}k_{70}k_{72}k_{73}k_{74} \oplus k_{55}k_{69}k_{70}k_{71}k_{75} \oplus \\
& k_{55}k_{69}k_{70}k_{71}k_{73}k_{74} \oplus k_{55}k_{67} \oplus k_{55}k_{66} \oplus k_{55}k_{64} \oplus k_{55}k_{64}k_{72}k_{73} \oplus \\
& k_{55}k_{64}k_{71}k_{72} \oplus k_{55}k_{64}k_{70}k_{71}k_{73} \oplus k_{55}k_{64}k_{70}k_{71}k_{72} \oplus k_{55}k_{61}k_{78} \oplus \\
& k_{55}k_{61}k_{76}k_{77} \oplus k_{55}k_{61}k_{74}k_{78} \oplus k_{55}k_{61}k_{74}k_{76}k_{77} \oplus k_{55}k_{61}k_{72}k_{73}k_{78} \oplus \\
& k_{55}k_{61}k_{72}k_{73}k_{76}k_{77} \oplus k_{55}k_{61}k_{64} \oplus k_{55}k_{61}k_{64}k_{73} \oplus k_{55}k_{61}k_{64}k_{72} \oplus \\
& k_{55}k_{61}k_{64}k_{72}k_{73} \oplus k_{55}k_{61}k_{64}k_{70}k_{71} \oplus k_{55}k_{61}k_{64}k_{70}k_{71}k_{73} \oplus \\
& k_{55}k_{61}k_{64}k_{70}k_{71}k_{72} \oplus k_{55}k_{60}k_{72} \oplus k_{55}k_{60}k_{70}k_{71} \oplus k_{55}k_{60}k_{64} \oplus \\
& k_{55}k_{60}k_{64}k_{72} \oplus k_{55}k_{60}k_{64}k_{70}k_{71} \oplus k_{55}k_{59}k_{64} \oplus k_{55}k_{59}k_{61}k_{64} \oplus \\
& k_{55}k_{59}k_{60}k_{78} \oplus k_{55}k_{59}k_{60}k_{76}k_{77} \oplus k_{55}k_{59}k_{60}k_{74}k_{78} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{55}k_{59}k_{60}k_{74}k_{76}k_{77} \oplus k_{55}k_{59}k_{60}k_{72}k_{73}k_{78} \oplus k_{55}k_{59}k_{60}k_{72}k_{73}k_{76}k_{77} \oplus \\
& k_{55}k_{59}k_{60}k_{64}k_{73} \oplus k_{55}k_{59}k_{60}k_{64}k_{72} \oplus k_{55}k_{59}k_{60}k_{64}k_{72}k_{73} \oplus \\
& k_{55}k_{59}k_{60}k_{64}k_{70}k_{71} \oplus k_{55}k_{59}k_{60}k_{64}k_{70}k_{71}k_{73} \oplus k_{55}k_{59}k_{60}k_{64}k_{70}k_{71}k_{72} \oplus \\
& k_{55}k_{58}k_{75} \oplus k_{55}k_{58}k_{73}k_{74} \oplus k_{55}k_{58}k_{59} \oplus k_{55}k_{58}k_{59}k_{72} \oplus k_{55}k_{58}k_{59}k_{70}k_{71} \oplus \\
& k_{55}k_{58}k_{59}k_{64} \oplus k_{55}k_{58}k_{59}k_{64}k_{72} \oplus k_{55}k_{58}k_{59}k_{64}k_{70}k_{71} \oplus k_{55}k_{57}k_{58}k_{64} \oplus \\
& k_{55}k_{57}k_{58}k_{61}k_{64} \oplus k_{55}k_{57}k_{58}k_{59}k_{60}k_{64} \oplus k_{55}k_{56}k_{75} \oplus k_{55}k_{56}k_{73} \oplus \\
& k_{55}k_{56}k_{73}k_{74} \oplus k_{55}k_{56}k_{71}k_{72} \oplus k_{55}k_{56}k_{64}k_{74} \oplus k_{55}k_{56}k_{64}k_{71}k_{72} \oplus \\
& k_{55}k_{56}k_{64}k_{70}k_{71}k_{73} \oplus k_{55}k_{56}k_{64}k_{70}k_{71}k_{72} \oplus k_{55}k_{56}k_{63} \oplus k_{55}k_{56}k_{62} \oplus \\
& k_{55}k_{56}k_{61}k_{64} \oplus k_{55}k_{56}k_{61}k_{64}k_{74} \oplus k_{55}k_{56}k_{61}k_{64}k_{73} \oplus k_{55}k_{56}k_{61}k_{64}k_{72} \oplus \\
& k_{55}k_{56}k_{61}k_{64}k_{70}k_{71} \oplus k_{55}k_{56}k_{61}k_{64}k_{70}k_{71}k_{73} \oplus k_{55}k_{56}k_{61}k_{64}k_{70}k_{71}k_{72} \oplus \\
& k_{55}k_{56}k_{60} \oplus k_{55}k_{56}k_{60}k_{72} \oplus k_{55}k_{56}k_{60}k_{70}k_{71} \oplus k_{55}k_{56}k_{60}k_{64} \oplus \\
& k_{55}k_{56}k_{60}k_{64}k_{72} \oplus k_{55}k_{56}k_{60}k_{64}k_{70}k_{71} \oplus k_{55}k_{56}k_{59}k_{64} \oplus \\
& k_{55}k_{56}k_{59}k_{61}k_{64} \oplus k_{55}k_{56}k_{59}k_{60}k_{64}k_{74} \oplus k_{55}k_{56}k_{59}k_{60}k_{64}k_{73} \oplus \\
& k_{55}k_{56}k_{59}k_{60}k_{64}k_{72} \oplus k_{55}k_{56}k_{59}k_{60}k_{64}k_{70}k_{71} \oplus \\
& k_{55}k_{56}k_{59}k_{60}k_{64}k_{70}k_{71}k_{73} \oplus k_{55}k_{56}k_{59}k_{60}k_{64}k_{70}k_{71}k_{72} \oplus k_{55}k_{56}k_{58}k_{59} \oplus \\
& k_{55}k_{56}k_{58}k_{59}k_{72} \oplus k_{55}k_{56}k_{58}k_{59}k_{70}k_{71} \oplus k_{55}k_{56}k_{58}k_{59}k_{64} \oplus \\
& k_{55}k_{56}k_{58}k_{59}k_{64}k_{72} \oplus k_{55}k_{56}k_{58}k_{59}k_{64}k_{70}k_{71} \oplus k_{55}k_{56}k_{57}k_{75} \oplus \\
& k_{55}k_{56}k_{57}k_{73}k_{74} \oplus k_{55}k_{56}k_{57}k_{58}k_{64} \oplus k_{55}k_{56}k_{57}k_{58}k_{61}k_{64} \oplus \\
& k_{55}k_{56}k_{57}k_{58}k_{59}k_{60}k_{64} \oplus k_{54}k_{78} \oplus k_{54}k_{76}k_{77} \oplus k_{54}k_{74} \oplus k_{54}k_{74}k_{75} \oplus \\
& k_{54}k_{73}k_{75} \oplus k_{54}k_{72}k_{76} \oplus k_{54}k_{72}k_{75} \oplus k_{54}k_{72}k_{74} \oplus k_{54}k_{72}k_{73}k_{75} \oplus \\
& k_{54}k_{72}k_{73}k_{74} \oplus k_{54}k_{70}k_{71}k_{76} \oplus k_{54}k_{70}k_{71}k_{75} \oplus k_{54}k_{70}k_{71}k_{74} \oplus \\
& k_{54}k_{70}k_{71}k_{73}k_{75} \oplus k_{54}k_{70}k_{71}k_{73}k_{74} \oplus k_{54}k_{70}k_{71}k_{72}k_{75} \oplus \\
& k_{54}k_{70}k_{71}k_{72}k_{73} \oplus k_{54}k_{70}k_{71}k_{72}k_{73}k_{75} \oplus k_{54}k_{61}k_{72} \oplus k_{54}k_{61}k_{70}k_{71} \oplus \\
& k_{54}k_{59}k_{75} \oplus k_{54}k_{59}k_{73}k_{74} \oplus k_{54}k_{59}k_{60}k_{72} \oplus k_{54}k_{59}k_{60}k_{70}k_{71} \oplus \\
& k_{54}k_{57}k_{60}k_{64} \oplus k_{54}k_{57}k_{58}k_{75} \oplus k_{54}k_{57}k_{58}k_{73}k_{74} \oplus k_{54}k_{57}k_{58}k_{59}k_{64} \oplus \\
& k_{54}k_{56}k_{75} \oplus k_{54}k_{56}k_{73}k_{74} \oplus k_{54}k_{56}k_{72} \oplus k_{54}k_{56}k_{70}k_{71} \oplus k_{54}k_{55} \oplus \\
& k_{54}k_{55}k_{75} \oplus k_{54}k_{55}k_{73} \oplus k_{54}k_{55}k_{73}k_{78}k_{79} \oplus k_{54}k_{55}k_{73}k_{74} \oplus k_{54}k_{55}k_{71}k_{72} \oplus \\
& k_{54}k_{55}k_{71}k_{72}k_{78}k_{79} \oplus k_{54}k_{55}k_{61} \oplus k_{54}k_{55}k_{59} \oplus k_{54}k_{55}k_{59}k_{78}k_{79} \oplus \\
& k_{53}k_{74}k_{75} \oplus k_{53}k_{73} \oplus k_{53}k_{73}k_{75} \oplus k_{53}k_{72} \oplus k_{53}k_{72}k_{76} \oplus k_{53}k_{72}k_{75} \oplus \\
& k_{53}k_{72}k_{74} \oplus k_{53}k_{72}k_{73} \oplus k_{53}k_{72}k_{73}k_{75} \oplus k_{53}k_{72}k_{73}k_{74} \oplus k_{53}k_{71}k_{72} \oplus \\
& k_{53}k_{70}k_{71} \oplus k_{53}k_{70}k_{71}k_{76} \oplus k_{53}k_{70}k_{71}k_{75} \oplus k_{53}k_{70}k_{71}k_{74} \oplus \\
& k_{53}k_{70}k_{71}k_{73}k_{75} \oplus k_{53}k_{70}k_{71}k_{73}k_{74} \oplus k_{53}k_{70}k_{71}k_{72}k_{75} \oplus \\
& k_{53}k_{70}k_{71}k_{72}k_{73} \oplus k_{53}k_{70}k_{71}k_{72}k_{73}k_{75} \oplus k_{53}k_{65} \oplus k_{53}k_{63}k_{64} \oplus k_{53}k_{62} \oplus \\
& k_{53}k_{61}k_{72} \oplus k_{53}k_{61}k_{70}k_{71} \oplus k_{53}k_{60}k_{61} \oplus k_{53}k_{59}k_{75} \oplus k_{53}k_{59}k_{73}k_{74} \oplus \\
& k_{53}k_{59}k_{60}k_{72} \oplus k_{53}k_{59}k_{60}k_{70}k_{71} \oplus k_{53}k_{57}k_{58}k_{75} \oplus k_{53}k_{57}k_{58}k_{73}k_{74} \oplus \\
& k_{53}k_{56}k_{75} \oplus k_{53}k_{56}k_{73} \oplus k_{53}k_{56}k_{73}k_{74} \oplus k_{53}k_{56}k_{72} \oplus k_{53}k_{56}k_{71}k_{72} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{53}k_{56}k_{70}k_{71} \oplus k_{53}k_{56}k_{59} \oplus k_{53}k_{55}k_{75} \oplus k_{53}k_{55}k_{73}k_{74} \oplus k_{53}k_{54}k_{60} \oplus \\
& k_{53}k_{54}k_{55}k_{73} \oplus k_{53}k_{54}k_{55}k_{71}k_{72} \oplus k_{53}k_{54}k_{55}k_{59} \oplus k_{52} \oplus k_{52}k_{79} \oplus k_{52}k_{78} \oplus \\
& k_{52}k_{77}k_{78} \oplus k_{52}k_{76}k_{77} \oplus k_{52}k_{75} \oplus k_{52}k_{74}k_{78} \oplus k_{52}k_{74}k_{76}k_{77} \oplus k_{52}k_{73}k_{74} \oplus \\
& k_{52}k_{72}k_{73}k_{78} \oplus k_{52}k_{72}k_{73}k_{76}k_{77} \oplus k_{52}k_{68}k_{74} \oplus k_{52}k_{68}k_{72}k_{73} \oplus k_{52}k_{67} \oplus \\
& k_{52}k_{65} \oplus k_{52}k_{64} \oplus k_{52}k_{63}k_{64} \oplus k_{52}k_{63}k_{64}k_{66} \oplus k_{52}k_{63}k_{64}k_{65} \oplus k_{52}k_{60} \oplus \\
& k_{52}k_{60}k_{61} \oplus k_{51}k_{79} \oplus k_{51}k_{78} \oplus k_{51}k_{77} \oplus k_{51}k_{76} \oplus k_{51}k_{76}k_{77} \oplus \\
& k_{51}k_{76}k_{77}k_{79} \oplus k_{51}k_{76}k_{77}k_{78} \oplus k_{51}k_{75} \oplus k_{51}k_{75}k_{76} \oplus k_{51}k_{74}k_{79} \oplus \\
& k_{51}k_{74}k_{77}k_{78} \oplus k_{51}k_{74}k_{75} \oplus k_{51}k_{73}k_{74} \oplus k_{51}k_{72}k_{73}k_{79} \oplus k_{51}k_{72}k_{73}k_{77}k_{78} \oplus \\
& k_{51}k_{68}k_{79} \oplus k_{51}k_{68}k_{77}k_{78} \oplus k_{51}k_{67} \oplus k_{51}k_{65} \oplus k_{51}k_{64} \oplus k_{51}k_{64}k_{65} \oplus \\
& k_{51}k_{63}k_{64} \oplus k_{51}k_{63}k_{64}k_{66} \oplus k_{51}k_{63}k_{64}k_{65} \oplus k_{51}k_{62} \oplus k_{51}k_{61}k_{74} \oplus \\
& k_{51}k_{61}k_{73} \oplus k_{51}k_{61}k_{72}k_{73} \oplus k_{51}k_{61}k_{71}k_{72} \oplus k_{51}k_{60} \oplus k_{51}k_{60}k_{77} \oplus \\
& k_{51}k_{60}k_{75}k_{76} \oplus k_{51}k_{60}k_{74} \oplus k_{51}k_{60}k_{72}k_{73} \oplus k_{51}k_{60}k_{64} \oplus k_{51}k_{60}k_{61} \oplus \\
& k_{51}k_{59} \oplus k_{51}k_{59}k_{60} \oplus k_{51}k_{59}k_{60}k_{74} \oplus k_{51}k_{59}k_{60}k_{73} \oplus k_{51}k_{59}k_{60}k_{72}k_{73} \oplus \\
& k_{51}k_{59}k_{60}k_{71}k_{72} \oplus k_{51}k_{58}k_{72} \oplus k_{51}k_{58}k_{72}k_{76} \oplus k_{51}k_{58}k_{72}k_{74}k_{75} \oplus \\
& k_{51}k_{58}k_{70}k_{71} \oplus k_{51}k_{58}k_{70}k_{71}k_{76} \oplus k_{51}k_{58}k_{70}k_{71}k_{74}k_{75} \oplus k_{51}k_{56} \oplus \\
& k_{51}k_{56}k_{74} \oplus k_{51}k_{56}k_{72} \oplus k_{51}k_{56}k_{72}k_{76} \oplus k_{51}k_{56}k_{72}k_{74}k_{75} \oplus k_{51}k_{56}k_{72}k_{73} \oplus \\
& k_{51}k_{56}k_{70}k_{71} \oplus k_{51}k_{56}k_{70}k_{71}k_{76} \oplus k_{51}k_{56}k_{70}k_{71}k_{74}k_{75} \oplus k_{51}k_{55} \oplus \\
& k_{51}k_{55}k_{61} \oplus k_{51}k_{55}k_{61}k_{74} \oplus k_{51}k_{55}k_{61}k_{72}k_{73} \oplus k_{51}k_{55}k_{59}k_{60} \oplus \\
& k_{51}k_{55}k_{59}k_{60}k_{74} \oplus k_{51}k_{55}k_{59}k_{60}k_{72}k_{73} \oplus k_{51}k_{52} \oplus k_{51}k_{52}k_{78} \oplus \\
& k_{51}k_{52}k_{76}k_{77} \oplus k_{51}k_{52}k_{74} \oplus k_{51}k_{52}k_{72}k_{73} \oplus k_{51}k_{52}k_{68} \oplus k_{51}k_{52}k_{62} \oplus \\
& k_{51}k_{52}k_{60}k_{61} \oplus k_{50}k_{79} \oplus k_{50}k_{77} \oplus k_{50}k_{76}k_{77}k_{79} \oplus k_{50}k_{76}k_{77}k_{78} \oplus k_{50}k_{75} \oplus \\
& k_{50}k_{75}k_{76} \oplus k_{50}k_{74}k_{75} \oplus k_{50}k_{73} \oplus k_{50}k_{73}k_{76} \oplus k_{50}k_{73}k_{75} \oplus k_{50}k_{73}k_{74}k_{75} \oplus \\
& k_{50}k_{72} \oplus k_{50}k_{72}k_{76} \oplus k_{50}k_{72}k_{74}k_{75} \oplus k_{50}k_{72}k_{73} \oplus k_{50}k_{72}k_{73}k_{75} \oplus \\
& k_{50}k_{72}k_{73}k_{74} \oplus k_{50}k_{71}k_{72} \oplus k_{50}k_{71}k_{72}k_{76} \oplus k_{50}k_{71}k_{72}k_{75} \oplus k_{50}k_{71}k_{72}k_{74} \oplus \\
& k_{50}k_{71}k_{72}k_{74}k_{75} \oplus k_{50}k_{71}k_{72}k_{73} \oplus k_{50}k_{71}k_{72}k_{73}k_{74} \oplus k_{50}k_{70}k_{71} \oplus \\
& k_{50}k_{70}k_{71}k_{76} \oplus k_{50}k_{70}k_{71}k_{74}k_{75} \oplus k_{50}k_{68}k_{79} \oplus k_{50}k_{68}k_{77}k_{78} \oplus k_{50}k_{67} \oplus \\
& k_{50}k_{65} \oplus k_{50}k_{64}k_{75} \oplus k_{50}k_{64}k_{73}k_{74} \oplus k_{50}k_{64}k_{65} \oplus k_{50}k_{63} \oplus k_{50}k_{63}k_{64} \oplus \\
& k_{50}k_{63}k_{64}k_{66} \oplus k_{50}k_{63}k_{64}k_{65} \oplus k_{50}k_{61}k_{76} \oplus k_{50}k_{61}k_{74}k_{75} \oplus k_{50}k_{61}k_{73}k_{76} \oplus \\
& k_{50}k_{61}k_{73}k_{74}k_{75} \oplus k_{50}k_{61}k_{71}k_{72}k_{76} \oplus k_{50}k_{61}k_{71}k_{72}k_{74}k_{75} \oplus k_{50}k_{61}k_{62} \oplus \\
& k_{50}k_{60}k_{77} \oplus k_{50}k_{60}k_{75} \oplus k_{50}k_{60}k_{75}k_{76} \oplus k_{50}k_{60}k_{73}k_{74} \oplus k_{50}k_{60}k_{64} \oplus \\
& k_{50}k_{60}k_{61} \oplus k_{50}k_{59} \oplus k_{50}k_{59}k_{60} \oplus k_{50}k_{59}k_{60}k_{76} \oplus k_{50}k_{59}k_{60}k_{74}k_{75} \oplus \\
& k_{50}k_{59}k_{60}k_{73}k_{76} \oplus k_{50}k_{59}k_{60}k_{73}k_{74}k_{75} \oplus k_{50}k_{59}k_{60}k_{71}k_{72}k_{76} \oplus \\
& k_{50}k_{59}k_{60}k_{71}k_{72}k_{74}k_{75} \oplus k_{50}k_{58} \oplus k_{50}k_{58}k_{75} \oplus k_{50}k_{58}k_{73}k_{74} \oplus k_{50}k_{58}k_{72} \oplus \\
& k_{50}k_{58}k_{72}k_{76} \oplus k_{50}k_{58}k_{72}k_{74}k_{75} \oplus k_{50}k_{58}k_{70}k_{71} \oplus k_{50}k_{58}k_{70}k_{71}k_{76} \oplus \\
& k_{50}k_{58}k_{70}k_{71}k_{74}k_{75} \oplus k_{50}k_{58}k_{59}k_{75} \oplus k_{50}k_{58}k_{59}k_{73}k_{74} \oplus k_{50}k_{57} \oplus \\
& k_{50}k_{56}k_{72} \oplus k_{50}k_{56}k_{72}k_{76} \oplus k_{50}k_{56}k_{72}k_{74}k_{75} \oplus k_{50}k_{56}k_{70}k_{71} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{50}k_{56}k_{70}k_{71}k_{76} \oplus k_{50}k_{56}k_{70}k_{71}k_{74}k_{75} \oplus k_{50}k_{54} \oplus k_{50}k_{52}k_{78} \oplus \\
& k_{50}k_{52}k_{76}k_{77} \oplus k_{50}k_{52}k_{68} \oplus k_{50}k_{51}k_{74} \oplus k_{50}k_{51}k_{72}k_{73} \oplus k_{50}k_{51}k_{64} \oplus \\
& k_{50}k_{51}k_{62} \oplus k_{50}k_{51}k_{60}k_{61} \oplus k_{49}k_{79} \oplus k_{49}k_{78} \oplus k_{49}k_{76} \oplus k_{49}k_{76}k_{77} \oplus \\
& k_{49}k_{76}k_{77}k_{79} \oplus k_{49}k_{76}k_{77}k_{78} \oplus k_{49}k_{74} \oplus k_{49}k_{73} \oplus k_{49}k_{73}k_{74} \oplus k_{49}k_{72} \oplus \\
& k_{49}k_{72}k_{77} \oplus k_{49}k_{72}k_{76} \oplus k_{49}k_{72}k_{75} \oplus k_{49}k_{72}k_{75}k_{76} \oplus k_{49}k_{72}k_{74}k_{75} \oplus \\
& k_{49}k_{72}k_{73} \oplus k_{49}k_{72}k_{73}k_{75} \oplus k_{49}k_{71}k_{72} \oplus k_{49}k_{70}k_{71} \oplus k_{49}k_{70}k_{71}k_{77} \oplus \\
& k_{49}k_{70}k_{71}k_{76} \oplus k_{49}k_{70}k_{71}k_{75} \oplus k_{49}k_{70}k_{71}k_{75}k_{76} \oplus k_{49}k_{70}k_{71}k_{74}k_{75} \oplus \\
& k_{49}k_{70}k_{71}k_{73}k_{74} \oplus k_{49}k_{68}k_{79} \oplus k_{49}k_{68}k_{77}k_{78} \oplus k_{49}k_{67} \oplus k_{49}k_{66} \oplus k_{49}k_{65} \oplus \\
& k_{49}k_{63} \oplus k_{49}k_{63}k_{64} \oplus k_{49}k_{63}k_{64}k_{66} \oplus k_{49}k_{63}k_{64}k_{65} \oplus k_{49}k_{62} \oplus k_{49}k_{61} \oplus \\
& k_{49}k_{61}k_{77} \oplus k_{49}k_{61}k_{75} \oplus k_{49}k_{61}k_{75}k_{76} \oplus k_{49}k_{61}k_{73} \oplus k_{49}k_{61}k_{73}k_{77} \oplus \\
& k_{49}k_{61}k_{73}k_{75}k_{76} \oplus k_{49}k_{61}k_{73}k_{74} \oplus k_{49}k_{61}k_{71}k_{72} \oplus k_{49}k_{61}k_{71}k_{72}k_{77} \oplus \\
& k_{49}k_{61}k_{71}k_{72}k_{75}k_{76} \oplus k_{49}k_{61}k_{62} \oplus k_{49}k_{60} \oplus k_{49}k_{60}k_{77} \oplus k_{49}k_{60}k_{75}k_{76} \oplus \\
& k_{49}k_{60}k_{66} \oplus k_{49}k_{60}k_{64} \oplus k_{49}k_{60}k_{64}k_{65} \oplus k_{49}k_{59}k_{60}k_{77} \oplus k_{49}k_{59}k_{60}k_{75} \oplus \\
& k_{49}k_{59}k_{60}k_{75}k_{76} \oplus k_{49}k_{59}k_{60}k_{73} \oplus k_{49}k_{59}k_{60}k_{73}k_{77} \oplus \\
& k_{49}k_{59}k_{60}k_{73}k_{75}k_{76} \oplus k_{49}k_{59}k_{60}k_{73}k_{74} \oplus k_{49}k_{59}k_{60}k_{71}k_{72} \oplus \\
& k_{49}k_{59}k_{60}k_{71}k_{72}k_{77} \oplus k_{49}k_{59}k_{60}k_{71}k_{72}k_{75}k_{76} \oplus k_{49}k_{58} \oplus k_{49}k_{58}k_{75} \oplus \\
& k_{49}k_{58}k_{73}k_{74} \oplus k_{49}k_{58}k_{72} \oplus k_{49}k_{58}k_{72}k_{78} \oplus k_{49}k_{58}k_{72}k_{77} \oplus \\
& k_{49}k_{58}k_{72}k_{76}k_{77} \oplus k_{49}k_{58}k_{72}k_{75}k_{76} \oplus k_{49}k_{58}k_{70}k_{71} \oplus k_{49}k_{58}k_{70}k_{71}k_{78} \oplus \\
& k_{49}k_{58}k_{70}k_{71}k_{77} \oplus k_{49}k_{58}k_{70}k_{71}k_{76}k_{77} \oplus k_{49}k_{58}k_{70}k_{71}k_{75}k_{76} \oplus \\
& k_{49}k_{58}k_{59} \oplus k_{49}k_{56} \oplus k_{49}k_{56}k_{72} \oplus k_{49}k_{56}k_{72}k_{78} \oplus k_{49}k_{56}k_{72}k_{77} \oplus \\
& k_{49}k_{56}k_{72}k_{76}k_{77} \oplus k_{49}k_{56}k_{72}k_{75}k_{76} \oplus k_{49}k_{56}k_{70}k_{71} \oplus k_{49}k_{56}k_{70}k_{71}k_{78} \oplus \\
& k_{49}k_{56}k_{70}k_{71}k_{77} \oplus k_{49}k_{56}k_{70}k_{71}k_{76}k_{77} \oplus k_{49}k_{56}k_{70}k_{71}k_{75}k_{76} \oplus k_{49}k_{55} \oplus \\
& k_{49}k_{55}k_{72}k_{75} \oplus k_{49}k_{55}k_{72}k_{73}k_{74} \oplus k_{49}k_{55}k_{70}k_{71}k_{75} \oplus \\
& k_{49}k_{55}k_{70}k_{71}k_{73}k_{74} \oplus k_{49}k_{54} \oplus k_{49}k_{54}k_{72} \oplus k_{49}k_{54}k_{70}k_{71} \oplus k_{49}k_{52}k_{78} \oplus \\
& k_{49}k_{52}k_{76}k_{77} \oplus k_{49}k_{52}k_{68} \oplus k_{49}k_{51}k_{79} \oplus k_{49}k_{51}k_{77}k_{78} \oplus k_{49}k_{51}k_{58}k_{72} \oplus \\
& k_{49}k_{51}k_{58}k_{70}k_{71} \oplus k_{49}k_{51}k_{56}k_{72} \oplus k_{49}k_{51}k_{56}k_{70}k_{71} \oplus k_{49}k_{51}k_{52} \oplus k_{49}k_{50} \oplus \\
& k_{49}k_{50}k_{79} \oplus k_{49}k_{50}k_{78} \oplus k_{49}k_{50}k_{77} \oplus k_{49}k_{50}k_{76}k_{77} \oplus k_{49}k_{50}k_{76}k_{77}k_{79} \oplus \\
& k_{49}k_{50}k_{76}k_{77}k_{78} \oplus k_{49}k_{50}k_{75} \oplus k_{49}k_{50}k_{75}k_{76} \oplus k_{49}k_{50}k_{74} \oplus k_{49}k_{50}k_{73}k_{74} \oplus \\
& k_{49}k_{50}k_{72} \oplus k_{49}k_{50}k_{72}k_{73} \oplus k_{49}k_{50}k_{70}k_{71} \oplus k_{49}k_{50}k_{68}k_{79} \oplus \\
& k_{49}k_{50}k_{68}k_{77}k_{78} \oplus k_{49}k_{50}k_{67} \oplus k_{49}k_{50}k_{66} \oplus k_{49}k_{50}k_{65} \oplus k_{49}k_{50}k_{64} \oplus \\
& k_{49}k_{50}k_{63} \oplus k_{49}k_{50}k_{63}k_{64} \oplus k_{49}k_{50}k_{63}k_{64}k_{66} \oplus k_{49}k_{50}k_{63}k_{64}k_{65} \oplus \\
& k_{49}k_{50}k_{61}k_{73} \oplus k_{49}k_{50}k_{61}k_{71}k_{72} \oplus k_{49}k_{50}k_{61}k_{62} \oplus k_{49}k_{50}k_{60}k_{77} \oplus \\
& k_{49}k_{50}k_{60}k_{75}k_{76} \oplus k_{49}k_{50}k_{60}k_{64} \oplus k_{49}k_{50}k_{60}k_{61} \oplus k_{49}k_{50}k_{59} \oplus \\
& k_{49}k_{50}k_{59}k_{60} \oplus k_{49}k_{50}k_{59}k_{60}k_{73} \oplus k_{49}k_{50}k_{59}k_{60}k_{71}k_{72} \oplus k_{49}k_{50}k_{58}k_{72} \oplus \\
& k_{49}k_{50}k_{58}k_{70}k_{71} \oplus k_{49}k_{50}k_{56}k_{72} \oplus k_{49}k_{50}k_{56}k_{70}k_{71} \oplus k_{49}k_{50}k_{54} \oplus \\
& k_{49}k_{50}k_{52} \oplus k_{49}k_{50}k_{52}k_{78} \oplus k_{49}k_{50}k_{52}k_{76}k_{77} \oplus k_{49}k_{50}k_{52}k_{68} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{49}k_{50}k_{51}k_{79} \oplus k_{49}k_{50}k_{51}k_{77}k_{78} \oplus k_{49}k_{50}k_{51}k_{52} \oplus k_{48}k_{79} \oplus k_{48}k_{78} \oplus \\
& k_{48}k_{78}k_{79} \oplus k_{48}k_{77} \oplus k_{48}k_{77}k_{78} \oplus k_{48}k_{76}k_{77} \oplus k_{48}k_{75} \oplus k_{48}k_{75}k_{76} \oplus \\
& k_{48}k_{74} \oplus k_{48}k_{74}k_{78}k_{79} \oplus k_{48}k_{74}k_{76} \oplus k_{48}k_{74}k_{75} \oplus k_{48}k_{73}k_{78}k_{79} \oplus \\
& k_{48}k_{72}k_{78}k_{79} \oplus k_{48}k_{72}k_{74}k_{78}k_{79} \oplus k_{48}k_{72}k_{73}k_{78}k_{79} \oplus k_{48}k_{72}k_{73}k_{76} \oplus \\
& k_{48}k_{72}k_{73}k_{74}k_{75} \oplus k_{48}k_{71} \oplus k_{48}k_{71}k_{72} \oplus k_{48}k_{71}k_{72}k_{74} \oplus k_{48}k_{71}k_{72}k_{73} \oplus \\
& k_{48}k_{70}k_{71} \oplus k_{48}k_{70}k_{71}k_{78}k_{79} \oplus k_{48}k_{70}k_{71}k_{74}k_{78}k_{79} \oplus \\
& k_{48}k_{70}k_{71}k_{73}k_{78}k_{79} \oplus k_{48}k_{70}k_{71}k_{72}k_{78}k_{79} \oplus k_{48}k_{70}k_{71}k_{72}k_{73}k_{78}k_{79} \oplus \\
& k_{48}k_{69} \oplus k_{48}k_{69}k_{70} \oplus k_{48}k_{69}k_{70}k_{72} \oplus k_{48}k_{69}k_{70}k_{71} \oplus k_{48}k_{67}k_{68} \oplus k_{48}k_{66} \oplus \\
& k_{48}k_{64} \oplus k_{48}k_{61}k_{76} \oplus k_{48}k_{61}k_{74}k_{75} \oplus k_{48}k_{60} \oplus k_{48}k_{60}k_{72} \oplus k_{48}k_{60}k_{70}k_{71} \oplus \\
& k_{48}k_{59}k_{78}k_{79} \oplus k_{48}k_{59}k_{72} \oplus k_{48}k_{59}k_{70}k_{71} \oplus k_{48}k_{59}k_{60}k_{76} \oplus \\
& k_{48}k_{59}k_{60}k_{74}k_{75} \oplus k_{48}k_{58} \oplus k_{48}k_{58}k_{76} \oplus k_{48}k_{58}k_{74}k_{75} \oplus k_{48}k_{58}k_{59} \oplus \\
& k_{48}k_{58}k_{59}k_{72} \oplus k_{48}k_{58}k_{59}k_{70}k_{71} \oplus k_{48}k_{57}k_{74} \oplus k_{48}k_{57}k_{72}k_{73} \oplus k_{48}k_{57}k_{64} \oplus \\
& k_{48}k_{57}k_{58}k_{78}k_{79} \oplus k_{48}k_{57}k_{58}k_{72} \oplus k_{48}k_{57}k_{58}k_{70}k_{71} \oplus k_{48}k_{56}k_{78}k_{79} \oplus \\
& k_{48}k_{56}k_{64} \oplus k_{48}k_{56}k_{57} \oplus k_{48}k_{55} \oplus k_{48}k_{55}k_{78}k_{79} \oplus k_{48}k_{55}k_{74} \oplus k_{48}k_{55}k_{73} \oplus \\
& k_{48}k_{55}k_{72}k_{73} \oplus k_{48}k_{55}k_{71} \oplus k_{48}k_{55}k_{70}k_{71} \oplus k_{48}k_{55}k_{69}k_{70} \oplus \\
& k_{48}k_{55}k_{69}k_{70}k_{72} \oplus k_{48}k_{55}k_{69}k_{70}k_{71} \oplus k_{48}k_{55}k_{58} \oplus k_{48}k_{55}k_{56} \oplus \\
& k_{48}k_{55}k_{56}k_{57} \oplus k_{48}k_{54}k_{74} \oplus k_{48}k_{54}k_{73} \oplus k_{48}k_{54}k_{72} \oplus k_{48}k_{54}k_{72}k_{74} \oplus \\
& k_{48}k_{54}k_{72}k_{73} \oplus k_{48}k_{54}k_{70}k_{71} \oplus k_{48}k_{54}k_{70}k_{71}k_{74} \oplus k_{48}k_{54}k_{70}k_{71}k_{73} \oplus \\
& k_{48}k_{54}k_{70}k_{71}k_{72} \oplus k_{48}k_{54}k_{70}k_{71}k_{72}k_{73} \oplus k_{48}k_{54}k_{59} \oplus k_{48}k_{54}k_{57}k_{58} \oplus \\
& k_{48}k_{54}k_{56} \oplus k_{48}k_{54}k_{55} \oplus k_{48}k_{53} \oplus k_{48}k_{53}k_{74} \oplus k_{48}k_{53}k_{73} \oplus k_{48}k_{53}k_{72} \oplus \\
& k_{48}k_{53}k_{72}k_{74} \oplus k_{48}k_{53}k_{72}k_{73} \oplus k_{48}k_{53}k_{70}k_{71} \oplus k_{48}k_{53}k_{70}k_{71}k_{74} \oplus \\
& k_{48}k_{53}k_{70}k_{71}k_{73} \oplus k_{48}k_{53}k_{70}k_{71}k_{72} \oplus k_{48}k_{53}k_{70}k_{71}k_{72}k_{73} \oplus k_{48}k_{53}k_{59} \oplus \\
& k_{48}k_{53}k_{57}k_{58} \oplus k_{48}k_{53}k_{56} \oplus k_{48}k_{53}k_{55} \oplus k_{48}k_{52} \oplus k_{48}k_{51} \oplus k_{48}k_{50} \oplus \\
& k_{48}k_{50}k_{74} \oplus k_{48}k_{50}k_{73} \oplus k_{48}k_{50}k_{72}k_{73} \oplus k_{48}k_{50}k_{71}k_{72} \oplus k_{48}k_{50}k_{64} \oplus \\
& k_{48}k_{50}k_{60} \oplus k_{48}k_{50}k_{58} \oplus k_{48}k_{50}k_{58}k_{59} \oplus k_{48}k_{49}k_{79} \oplus k_{48}k_{49}k_{77} \oplus \\
& k_{48}k_{49}k_{76}k_{77}k_{79} \oplus k_{48}k_{49}k_{76}k_{77}k_{78} \oplus k_{48}k_{49}k_{75} \oplus k_{48}k_{49}k_{75}k_{76} \oplus \\
& k_{48}k_{49}k_{74} \oplus k_{48}k_{49}k_{74}k_{75} \oplus k_{48}k_{49}k_{73} \oplus k_{48}k_{49}k_{73}k_{76} \oplus k_{48}k_{49}k_{73}k_{75} \oplus \\
& k_{48}k_{49}k_{73}k_{74}k_{75} \oplus k_{48}k_{49}k_{72} \oplus k_{48}k_{49}k_{72}k_{73}k_{75} \oplus k_{48}k_{49}k_{72}k_{73}k_{74} \oplus \\
& k_{48}k_{49}k_{71}k_{72} \oplus k_{48}k_{49}k_{71}k_{72}k_{76} \oplus k_{48}k_{49}k_{71}k_{72}k_{75} \oplus k_{48}k_{49}k_{71}k_{72}k_{74} \oplus \\
& k_{48}k_{49}k_{71}k_{72}k_{74}k_{75} \oplus k_{48}k_{49}k_{71}k_{72}k_{73} \oplus k_{48}k_{49}k_{71}k_{72}k_{73}k_{74} \oplus \\
& k_{48}k_{49}k_{70}k_{71} \oplus k_{48}k_{49}k_{68}k_{79} \oplus k_{48}k_{49}k_{68}k_{77}k_{78} \oplus k_{48}k_{49}k_{67} \oplus k_{48}k_{49}k_{66} \oplus \\
& k_{48}k_{49}k_{65} \oplus k_{48}k_{49}k_{64}k_{75} \oplus k_{48}k_{49}k_{64}k_{73}k_{74} \oplus k_{48}k_{49}k_{63} \oplus k_{48}k_{49}k_{63}k_{64} \oplus \\
& k_{48}k_{49}k_{63}k_{64}k_{66} \oplus k_{48}k_{49}k_{63}k_{64}k_{65} \oplus k_{48}k_{49}k_{61}k_{73} \oplus k_{48}k_{49}k_{61}k_{71}k_{72} \oplus \\
& k_{48}k_{49}k_{61}k_{62} \oplus k_{48}k_{49}k_{60} \oplus k_{48}k_{49}k_{60}k_{77} \oplus k_{48}k_{49}k_{60}k_{75} \oplus \\
& k_{48}k_{49}k_{60}k_{75}k_{76} \oplus k_{48}k_{49}k_{60}k_{73}k_{74} \oplus k_{48}k_{49}k_{60}k_{64} \oplus k_{48}k_{49}k_{60}k_{61} \oplus \\
& k_{48}k_{49}k_{59} \oplus k_{48}k_{49}k_{59}k_{60} \oplus k_{48}k_{49}k_{59}k_{60}k_{73} \oplus k_{48}k_{49}k_{59}k_{60}k_{71}k_{72} \oplus
\end{aligned}$$



$$\begin{aligned}
& k_{48}k_{49}k_{58}k_{75} \oplus k_{48}k_{49}k_{58}k_{73}k_{74} \oplus k_{48}k_{49}k_{58}k_{59} \oplus k_{48}k_{49}k_{58}k_{59}k_{75} \oplus \\
& k_{48}k_{49}k_{58}k_{59}k_{73}k_{74} \oplus k_{48}k_{49}k_{55}k_{72} \oplus k_{48}k_{49}k_{55}k_{70}k_{71} \oplus k_{48}k_{49}k_{54} \oplus \\
& k_{48}k_{49}k_{52}k_{78} \oplus k_{48}k_{49}k_{52}k_{76}k_{77} \oplus k_{48}k_{49}k_{52}k_{68} \oplus k_{48}k_{49}k_{51}k_{79} \oplus \\
& k_{48}k_{49}k_{51}k_{77}k_{78} \oplus k_{48}k_{49}k_{51}k_{52} \oplus k_{48}k_{49}k_{50}k_{60} \oplus k_{48}k_{49}k_{50}k_{51} \oplus k_{47}k_{79} \oplus \\
& k_{47}k_{76} \oplus k_{47}k_{76}k_{77}k_{79} \oplus k_{47}k_{76}k_{77}k_{78} \oplus k_{47}k_{75}k_{78}k_{79} \oplus k_{47}k_{75}k_{76} \oplus \\
& k_{47}k_{73} \oplus k_{47}k_{73}k_{74}k_{78}k_{79} \oplus k_{47}k_{73}k_{74}k_{76} \oplus k_{47}k_{73}k_{74}k_{75} \oplus k_{47}k_{72}k_{78}k_{79} \oplus \\
& k_{47}k_{72}k_{75}k_{78}k_{79} \oplus k_{47}k_{72}k_{73}k_{74}k_{78}k_{79} \oplus k_{47}k_{71} \oplus k_{47}k_{71}k_{72} \oplus k_{47}k_{70} \oplus \\
& k_{47}k_{70}k_{71}k_{78}k_{79} \oplus k_{47}k_{70}k_{71}k_{75}k_{78}k_{79} \oplus k_{47}k_{70}k_{71}k_{73}k_{74}k_{78}k_{79} \oplus \\
& k_{47}k_{69}k_{70} \oplus k_{47}k_{68}k_{79} \oplus k_{47}k_{68}k_{77}k_{78} \oplus k_{47}k_{68}k_{69} \oplus k_{47}k_{66} \oplus k_{47}k_{65} \oplus \\
& k_{47}k_{64}k_{71} \oplus k_{47}k_{64}k_{69} \oplus k_{47}k_{64}k_{69}k_{70} \oplus k_{47}k_{64}k_{67}k_{68} \oplus k_{47}k_{63} \oplus \\
& k_{47}k_{63}k_{64} \oplus k_{47}k_{63}k_{64}k_{66} \oplus k_{47}k_{63}k_{64}k_{65} \oplus k_{47}k_{61} \oplus k_{47}k_{61}k_{78} \oplus \\
& k_{47}k_{61}k_{76}k_{77} \oplus k_{47}k_{61}k_{64}k_{69} \oplus k_{47}k_{61}k_{64}k_{67}k_{68} \oplus k_{47}k_{61}k_{62} \oplus k_{47}k_{60}k_{78} \oplus \\
& k_{47}k_{60}k_{76}k_{77} \oplus k_{47}k_{60}k_{72} \oplus k_{47}k_{60}k_{70}k_{71} \oplus k_{47}k_{60}k_{66} \oplus k_{47}k_{60}k_{64}k_{65} \oplus \\
& k_{47}k_{59} \oplus k_{47}k_{59}k_{72} \oplus k_{47}k_{59}k_{70}k_{71} \oplus k_{47}k_{59}k_{64} \oplus k_{47}k_{59}k_{60}k_{78} \oplus \\
& k_{47}k_{59}k_{60}k_{76}k_{77} \oplus k_{47}k_{59}k_{60}k_{64}k_{69} \oplus k_{47}k_{59}k_{60}k_{64}k_{67}k_{68} \oplus k_{47}k_{58}k_{64} \oplus \\
& k_{47}k_{58}k_{59}k_{72} \oplus k_{47}k_{58}k_{59}k_{70}k_{71} \oplus k_{47}k_{57} \oplus k_{47}k_{57}k_{75} \oplus k_{47}k_{57}k_{73}k_{74} \oplus \\
& k_{47}k_{57}k_{61}k_{64} \oplus k_{47}k_{57}k_{59}k_{60}k_{64} \oplus k_{47}k_{57}k_{58} \oplus k_{47}k_{57}k_{58}k_{72} \oplus \\
& k_{47}k_{57}k_{58}k_{70}k_{71} \oplus k_{47}k_{57}k_{58}k_{64} \oplus k_{47}k_{56}k_{78} \oplus k_{47}k_{56}k_{76}k_{77} \oplus \\
& k_{47}k_{56}k_{61}k_{64} \oplus k_{47}k_{56}k_{59}k_{60}k_{64} \oplus k_{47}k_{56}k_{57} \oplus k_{47}k_{55} \oplus k_{47}k_{55}k_{75} \oplus \\
& k_{47}k_{55}k_{73}k_{74} \oplus k_{47}k_{55}k_{61}k_{78} \oplus k_{47}k_{55}k_{61}k_{76}k_{77} \oplus k_{47}k_{55}k_{59}k_{60}k_{78} \oplus \\
& k_{47}k_{55}k_{59}k_{60}k_{76}k_{77} \oplus k_{47}k_{55}k_{56}k_{64} \oplus k_{47}k_{55}k_{56}k_{61}k_{64} \oplus \\
& k_{47}k_{55}k_{56}k_{59}k_{60}k_{64} \oplus k_{47}k_{54} \oplus k_{47}k_{54}k_{75} \oplus k_{47}k_{54}k_{73}k_{74} \oplus k_{47}k_{54}k_{72} \oplus \\
& k_{47}k_{54}k_{72}k_{75} \oplus k_{47}k_{54}k_{72}k_{73}k_{74} \oplus k_{47}k_{54}k_{70}k_{71} \oplus k_{47}k_{54}k_{70}k_{71}k_{75} \oplus \\
& k_{47}k_{54}k_{70}k_{71}k_{73}k_{74} \oplus k_{47}k_{53}k_{75} \oplus k_{47}k_{53}k_{73}k_{74} \oplus k_{47}k_{53}k_{72} \oplus \\
& k_{47}k_{53}k_{72}k_{75} \oplus k_{47}k_{53}k_{72}k_{73}k_{74} \oplus k_{47}k_{53}k_{70}k_{71} \oplus k_{47}k_{53}k_{70}k_{71}k_{75} \oplus \\
& k_{47}k_{53}k_{70}k_{71}k_{73}k_{74} \oplus k_{47}k_{52}k_{78} \oplus k_{47}k_{52}k_{76}k_{77} \oplus k_{47}k_{52}k_{68} \oplus k_{47}k_{51}k_{79} \oplus \\
& k_{47}k_{51}k_{77}k_{78} \oplus k_{47}k_{51}k_{61} \oplus k_{47}k_{51}k_{60} \oplus k_{47}k_{51}k_{59}k_{60} \oplus k_{47}k_{51}k_{56} \oplus \\
& k_{47}k_{51}k_{55}k_{61} \oplus k_{47}k_{51}k_{55}k_{59}k_{60} \oplus k_{47}k_{51}k_{52} \oplus k_{47}k_{50}k_{75} \oplus k_{47}k_{50}k_{73} \oplus \\
& k_{47}k_{50}k_{73}k_{74} \oplus k_{47}k_{50}k_{71}k_{72} \oplus k_{47}k_{50}k_{51} \oplus k_{47}k_{49} \oplus k_{47}k_{49}k_{75} \oplus \\
& k_{47}k_{49}k_{73}k_{74} \oplus k_{47}k_{49}k_{50} \oplus k_{47}k_{48}k_{79} \oplus k_{47}k_{48}k_{78} \oplus k_{47}k_{48}k_{78}k_{79} \oplus \\
& k_{47}k_{48}k_{77} \oplus k_{47}k_{48}k_{76}k_{77} \oplus k_{47}k_{48}k_{76}k_{77}k_{79} \oplus k_{47}k_{48}k_{76}k_{77}k_{78} \oplus \\
& k_{47}k_{48}k_{75}k_{76} \oplus k_{47}k_{48}k_{72}k_{76} \oplus k_{47}k_{48}k_{72}k_{75} \oplus k_{47}k_{48}k_{72}k_{74}k_{75} \oplus \\
& k_{47}k_{48}k_{72}k_{73}k_{74} \oplus k_{47}k_{48}k_{70}k_{71}k_{76} \oplus k_{47}k_{48}k_{70}k_{71}k_{75} \oplus \\
& k_{47}k_{48}k_{70}k_{71}k_{74}k_{75} \oplus k_{47}k_{48}k_{70}k_{71}k_{73}k_{74} \oplus k_{47}k_{48}k_{68}k_{79} \oplus \\
& k_{47}k_{48}k_{68}k_{77}k_{78} \oplus k_{47}k_{48}k_{67} \oplus k_{47}k_{48}k_{66} \oplus k_{47}k_{48}k_{65} \oplus k_{47}k_{48}k_{64} \oplus \\
& k_{47}k_{48}k_{63} \oplus k_{47}k_{48}k_{63}k_{64} \oplus k_{47}k_{48}k_{63}k_{64}k_{66} \oplus k_{47}k_{48}k_{63}k_{64}k_{65} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{47}k_{48}k_{61}k_{62} \oplus k_{47}k_{48}k_{60}k_{77} \oplus k_{47}k_{48}k_{60}k_{75}k_{76} \oplus k_{47}k_{48}k_{60}k_{64} \oplus \\
& k_{47}k_{48}k_{60}k_{61} \oplus k_{47}k_{48}k_{59} \oplus k_{47}k_{48}k_{59}k_{60} \oplus k_{47}k_{48}k_{58} \oplus k_{47}k_{48}k_{58}k_{59} \oplus \\
& k_{47}k_{48}k_{57} \oplus k_{47}k_{48}k_{57}k_{58} \oplus k_{47}k_{48}k_{55}k_{72} \oplus k_{47}k_{48}k_{55}k_{72}k_{75} \oplus \\
& k_{47}k_{48}k_{55}k_{72}k_{73}k_{74} \oplus k_{47}k_{48}k_{55}k_{70}k_{71} \oplus k_{47}k_{48}k_{55}k_{70}k_{71}k_{75} \oplus \\
& k_{47}k_{48}k_{55}k_{70}k_{71}k_{73}k_{74} \oplus k_{47}k_{48}k_{54}k_{72} \oplus k_{47}k_{48}k_{54}k_{70}k_{71} \oplus k_{47}k_{48}k_{53} \oplus \\
& k_{47}k_{48}k_{52}k_{78} \oplus k_{47}k_{48}k_{52}k_{76}k_{77} \oplus k_{47}k_{48}k_{52}k_{68} \oplus k_{47}k_{48}k_{51} \oplus \\
& k_{47}k_{48}k_{51}k_{79} \oplus k_{47}k_{48}k_{51}k_{77}k_{78} \oplus k_{47}k_{48}k_{51}k_{52} \oplus k_{47}k_{48}k_{50}k_{76} \oplus \\
& k_{47}k_{48}k_{50}k_{75} \oplus k_{47}k_{48}k_{50}k_{74} \oplus k_{47}k_{48}k_{50}k_{74}k_{75} \oplus k_{47}k_{48}k_{50}k_{73}k_{74} \oplus \\
& k_{47}k_{48}k_{50}k_{72}k_{73} \oplus k_{47}k_{48}k_{50}k_{61} \oplus k_{47}k_{48}k_{50}k_{60} \oplus k_{47}k_{48}k_{50}k_{59}k_{60} \oplus \\
& k_{47}k_{48}k_{50}k_{51} \oplus k_{47}k_{48}k_{49} \oplus k_{47}k_{48}k_{49}k_{76} \oplus k_{47}k_{48}k_{49}k_{74} \oplus \\
& k_{47}k_{48}k_{49}k_{74}k_{75} \oplus k_{47}k_{48}k_{49}k_{73} \oplus k_{47}k_{48}k_{49}k_{72} \oplus k_{47}k_{48}k_{49}k_{72}k_{73} \oplus \\
& k_{47}k_{48}k_{49}k_{71}k_{72} \oplus k_{47}k_{48}k_{49}k_{70}k_{71} \oplus k_{47}k_{48}k_{49}k_{61} \oplus k_{47}k_{48}k_{49}k_{59}k_{60} \oplus \\
& k_{47}k_{48}k_{49}k_{50} \oplus k_{46}k_{78} \oplus k_{46}k_{78}k_{79} \oplus k_{46}k_{76}k_{77} \oplus k_{46}k_{75}k_{78}k_{79} \oplus \\
& k_{46}k_{73}k_{74}k_{78}k_{79} \oplus k_{46}k_{72} \oplus k_{46}k_{72}k_{75}k_{78}k_{79} \oplus k_{46}k_{72}k_{73}k_{74}k_{78}k_{79} \oplus \\
& k_{46}k_{71} \oplus k_{46}k_{70}k_{71} \oplus k_{46}k_{70}k_{71}k_{75}k_{78}k_{79} \oplus k_{46}k_{70}k_{71}k_{73}k_{74}k_{78}k_{79} \oplus \\
& k_{46}k_{69} \oplus k_{46}k_{69}k_{70} \oplus k_{46}k_{67}k_{68} \oplus k_{46}k_{64}k_{72} \oplus k_{46}k_{64}k_{71} \oplus k_{46}k_{64}k_{70}k_{71} \oplus \\
& k_{46}k_{64}k_{69}k_{72} \oplus k_{46}k_{64}k_{69}k_{70} \oplus k_{46}k_{64}k_{69}k_{70}k_{71} \oplus k_{46}k_{64}k_{67}k_{68}k_{72} \oplus \\
& k_{46}k_{64}k_{67}k_{68}k_{70}k_{71} \oplus k_{46}k_{62} \oplus k_{46}k_{61}k_{78} \oplus k_{46}k_{61}k_{77} \oplus k_{46}k_{61}k_{76} \oplus \\
& k_{46}k_{61}k_{74}k_{75} \oplus k_{46}k_{61}k_{74}k_{75}k_{77} \oplus k_{46}k_{61}k_{74}k_{75}k_{76} \oplus k_{46}k_{61}k_{64} \oplus \\
& k_{46}k_{61}k_{64}k_{72} \oplus k_{46}k_{61}k_{64}k_{71} \oplus k_{46}k_{61}k_{64}k_{70}k_{71} \oplus k_{46}k_{61}k_{64}k_{69} \oplus \\
& k_{46}k_{61}k_{64}k_{69}k_{72} \oplus k_{46}k_{61}k_{64}k_{69}k_{70} \oplus k_{46}k_{61}k_{64}k_{69}k_{70}k_{71} \oplus \\
& k_{46}k_{61}k_{64}k_{67}k_{68} \oplus k_{46}k_{61}k_{64}k_{67}k_{68}k_{72} \oplus k_{46}k_{61}k_{64}k_{67}k_{68}k_{70}k_{71} \oplus \\
& k_{46}k_{61}k_{63} \oplus k_{46}k_{61}k_{62} \oplus k_{46}k_{60} \oplus k_{46}k_{60}k_{71} \oplus k_{46}k_{60}k_{69}k_{70} \oplus \\
& k_{46}k_{59}k_{64}k_{71} \oplus k_{46}k_{59}k_{64}k_{69}k_{70} \oplus k_{46}k_{59}k_{61}k_{64} \oplus k_{46}k_{59}k_{60} \oplus \\
& k_{46}k_{59}k_{60}k_{78} \oplus k_{46}k_{59}k_{60}k_{77} \oplus k_{46}k_{59}k_{60}k_{76} \oplus k_{46}k_{59}k_{60}k_{74}k_{75} \oplus \\
& k_{46}k_{59}k_{60}k_{74}k_{75}k_{77} \oplus k_{46}k_{59}k_{60}k_{74}k_{75}k_{76} \oplus k_{46}k_{59}k_{60}k_{64} \oplus \\
& k_{46}k_{59}k_{60}k_{64}k_{72} \oplus k_{46}k_{59}k_{60}k_{64}k_{70}k_{71} \oplus k_{46}k_{59}k_{60}k_{64}k_{69} \oplus \\
& k_{46}k_{59}k_{60}k_{64}k_{69}k_{72} \oplus k_{46}k_{59}k_{60}k_{64}k_{69}k_{70}k_{71} \oplus k_{46}k_{59}k_{60}k_{64}k_{67}k_{68} \oplus \\
& k_{46}k_{59}k_{60}k_{64}k_{67}k_{68}k_{72} \oplus k_{46}k_{59}k_{60}k_{64}k_{67}k_{68}k_{70}k_{71} \oplus k_{46}k_{59}k_{60}k_{63} \oplus \\
& k_{46}k_{59}k_{60}k_{61}k_{62} \oplus k_{46}k_{58}k_{64} \oplus k_{46}k_{58}k_{61}k_{64} \oplus k_{46}k_{58}k_{60} \oplus k_{46}k_{58}k_{59} \oplus \\
& k_{46}k_{58}k_{59}k_{71} \oplus k_{46}k_{58}k_{59}k_{69}k_{70} \oplus k_{46}k_{58}k_{59}k_{64} \oplus k_{46}k_{58}k_{59}k_{64}k_{71} \oplus \\
& k_{46}k_{58}k_{59}k_{64}k_{69}k_{70} \oplus k_{46}k_{58}k_{59}k_{61} \oplus k_{46}k_{58}k_{59}k_{60} \oplus k_{46}k_{57} \oplus k_{46}k_{57}k_{64} \oplus \\
& k_{46}k_{57}k_{64}k_{72} \oplus k_{46}k_{57}k_{64}k_{70}k_{71} \oplus k_{46}k_{57}k_{61}k_{64}k_{72} \oplus \\
& k_{46}k_{57}k_{61}k_{64}k_{70}k_{71} \oplus k_{46}k_{57}k_{60} \oplus k_{46}k_{57}k_{59}k_{64} \oplus k_{46}k_{57}k_{59}k_{60}k_{64} \oplus \\
& k_{46}k_{57}k_{59}k_{60}k_{64}k_{72} \oplus k_{46}k_{57}k_{59}k_{60}k_{64}k_{70}k_{71} \oplus k_{46}k_{57}k_{58} \oplus \\
& k_{46}k_{57}k_{58}k_{64}k_{71} \oplus k_{46}k_{57}k_{58}k_{64}k_{69}k_{70} \oplus k_{46}k_{57}k_{58}k_{61}k_{64} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{46}k_{57}k_{58}k_{60} \oplus k_{46}k_{57}k_{58}k_{60}k_{64} \oplus k_{46}k_{57}k_{58}k_{60}k_{64}k_{71} \oplus \\
& k_{46}k_{57}k_{58}k_{60}k_{64}k_{69}k_{70} \oplus k_{46}k_{57}k_{58}k_{59}k_{64}k_{71} \oplus k_{46}k_{57}k_{58}k_{59}k_{64}k_{69}k_{70} \oplus \\
& k_{46}k_{57}k_{58}k_{59}k_{60}k_{64} \oplus k_{46}k_{56} \oplus k_{46}k_{56}k_{78}k_{79} \oplus k_{46}k_{56}k_{72} \oplus k_{46}k_{56}k_{70}k_{71} \oplus \\
& k_{46}k_{56}k_{64}k_{72} \oplus k_{46}k_{56}k_{64}k_{70}k_{71} \oplus k_{46}k_{56}k_{61}k_{64} \oplus k_{46}k_{56}k_{61}k_{64}k_{72} \oplus \\
& k_{46}k_{56}k_{61}k_{64}k_{70}k_{71} \oplus k_{46}k_{56}k_{59}k_{60}k_{64} \oplus k_{46}k_{56}k_{59}k_{60}k_{64}k_{72} \oplus \\
& k_{46}k_{56}k_{59}k_{60}k_{64}k_{70}k_{71} \oplus k_{46}k_{55} \oplus k_{46}k_{55}k_{75} \oplus k_{46}k_{55}k_{73}k_{74} \oplus \\
& k_{46}k_{55}k_{64}k_{72} \oplus k_{46}k_{55}k_{64}k_{70}k_{71} \oplus k_{46}k_{55}k_{61}k_{64} \oplus k_{46}k_{55}k_{61}k_{64}k_{72} \oplus \\
& k_{46}k_{55}k_{61}k_{64}k_{70}k_{71} \oplus k_{46}k_{55}k_{59}k_{60}k_{64} \oplus k_{46}k_{55}k_{59}k_{60}k_{64}k_{72} \oplus \\
& k_{46}k_{55}k_{59}k_{60}k_{64}k_{70}k_{71} \oplus k_{46}k_{55}k_{56} \oplus k_{46}k_{55}k_{56}k_{64}k_{72} \oplus \\
& k_{46}k_{55}k_{56}k_{64}k_{70}k_{71} \oplus k_{46}k_{55}k_{56}k_{61}k_{64} \oplus k_{46}k_{55}k_{56}k_{61}k_{64}k_{72} \oplus \\
& k_{46}k_{55}k_{56}k_{61}k_{64}k_{70}k_{71} \oplus k_{46}k_{55}k_{56}k_{59}k_{60}k_{64} \oplus k_{46}k_{55}k_{56}k_{59}k_{60}k_{64}k_{72} \oplus \\
& k_{46}k_{55}k_{56}k_{59}k_{60}k_{64}k_{70}k_{71} \oplus k_{46}k_{54}k_{75} \oplus k_{46}k_{54}k_{73}k_{74} \oplus k_{46}k_{54}k_{72}k_{75} \oplus \\
& k_{46}k_{54}k_{72}k_{73}k_{74} \oplus k_{46}k_{54}k_{70}k_{71}k_{75} \oplus k_{46}k_{54}k_{70}k_{71}k_{73}k_{74} \oplus k_{46}k_{54}k_{55} \oplus \\
& k_{46}k_{54}k_{55}k_{78}k_{79} \oplus k_{46}k_{53} \oplus k_{46}k_{53}k_{75} \oplus k_{46}k_{53}k_{73}k_{74} \oplus k_{46}k_{53}k_{72}k_{75} \oplus \\
& k_{46}k_{53}k_{72}k_{73}k_{74} \oplus k_{46}k_{53}k_{70}k_{71}k_{75} \oplus k_{46}k_{53}k_{70}k_{71}k_{73}k_{74} \oplus k_{46}k_{53}k_{56} \oplus \\
& k_{46}k_{53}k_{54}k_{55} \oplus k_{46}k_{51}k_{61} \oplus k_{46}k_{51}k_{59}k_{60} \oplus k_{46}k_{50} \oplus k_{46}k_{50}k_{76} \oplus \\
& k_{46}k_{50}k_{75} \oplus k_{46}k_{50}k_{74} \oplus k_{46}k_{50}k_{74}k_{75} \oplus k_{46}k_{50}k_{73}k_{74} \oplus k_{46}k_{50}k_{72}k_{73} \oplus \\
& k_{46}k_{50}k_{61}k_{76} \oplus k_{46}k_{50}k_{61}k_{74}k_{75} \oplus k_{46}k_{50}k_{59}k_{60}k_{76} \oplus \\
& k_{46}k_{50}k_{59}k_{60}k_{74}k_{75} \oplus k_{46}k_{49} \oplus k_{46}k_{49}k_{61} \oplus k_{46}k_{49}k_{61}k_{77} \oplus \\
& k_{46}k_{49}k_{61}k_{75}k_{76} \oplus k_{46}k_{49}k_{59}k_{60} \oplus k_{46}k_{49}k_{59}k_{60}k_{77} \oplus \\
& k_{46}k_{49}k_{59}k_{60}k_{75}k_{76} \oplus k_{46}k_{49}k_{50}k_{61} \oplus k_{46}k_{49}k_{50}k_{59}k_{60} \oplus k_{46}k_{48}k_{78}k_{79} \oplus \\
& k_{46}k_{48}k_{74} \oplus k_{46}k_{48}k_{72}k_{78}k_{79} \oplus k_{46}k_{48}k_{72}k_{73} \oplus k_{46}k_{48}k_{70}k_{71}k_{78}k_{79} \oplus \\
& k_{46}k_{48}k_{55} \oplus k_{46}k_{48}k_{54} \oplus k_{46}k_{48}k_{54}k_{72} \oplus k_{46}k_{48}k_{54}k_{70}k_{71} \oplus k_{46}k_{48}k_{53} \oplus \\
& k_{46}k_{48}k_{53}k_{72} \oplus k_{46}k_{48}k_{53}k_{70}k_{71} \oplus k_{46}k_{48}k_{50} \oplus k_{46}k_{48}k_{49} \oplus k_{46}k_{48}k_{49}k_{76} \oplus \\
& k_{46}k_{48}k_{49}k_{75} \oplus k_{46}k_{48}k_{49}k_{74} \oplus k_{46}k_{48}k_{49}k_{74}k_{75} \oplus k_{46}k_{48}k_{49}k_{73}k_{74} \oplus \\
& k_{46}k_{48}k_{49}k_{72}k_{73} \oplus k_{46}k_{48}k_{49}k_{61} \oplus k_{46}k_{48}k_{49}k_{59}k_{60} \oplus k_{46}k_{47}k_{78}k_{79} \oplus \\
& k_{46}k_{47}k_{75} \oplus k_{46}k_{47}k_{73} \oplus k_{46}k_{47}k_{72} \oplus k_{46}k_{47}k_{72}k_{73} \oplus k_{46}k_{47}k_{71} \oplus \\
& k_{46}k_{47}k_{71}k_{72} \oplus k_{46}k_{47}k_{71}k_{72}k_{74} \oplus k_{46}k_{47}k_{71}k_{72}k_{73} \oplus k_{46}k_{47}k_{70}k_{71} \oplus \\
& k_{46}k_{47}k_{69}k_{70} \oplus k_{46}k_{47}k_{62} \oplus k_{46}k_{47}k_{61} \oplus k_{46}k_{47}k_{60}k_{72} \oplus k_{46}k_{47}k_{60}k_{70}k_{71} \oplus \\
& k_{46}k_{47}k_{60}k_{61} \oplus k_{46}k_{47}k_{59} \oplus k_{46}k_{47}k_{59}k_{72} \oplus k_{46}k_{47}k_{59}k_{70}k_{71} \oplus \\
& k_{46}k_{47}k_{59}k_{60} \oplus k_{46}k_{47}k_{58} \oplus k_{46}k_{47}k_{58}k_{59}k_{72} \oplus k_{46}k_{47}k_{58}k_{59}k_{70}k_{71} \oplus \\
& k_{46}k_{47}k_{57}k_{58} \oplus k_{46}k_{47}k_{57}k_{58}k_{72} \oplus k_{46}k_{47}k_{57}k_{58}k_{70}k_{71} \oplus k_{46}k_{47}k_{55} \oplus \\
& k_{46}k_{47}k_{53} \oplus k_{46}k_{47}k_{50} \oplus k_{46}k_{47}k_{48} \oplus k_{46}k_{47}k_{48}k_{49} \oplus k_{45}k_{78}k_{79} \oplus k_{45}k_{77} \oplus \\
& k_{45}k_{76} \oplus k_{45}k_{76}k_{78}k_{79} \oplus k_{45}k_{76}k_{77} \oplus k_{45}k_{75} \oplus k_{45}k_{75}k_{78}k_{79} \oplus k_{45}k_{74} \oplus \\
& k_{45}k_{74}k_{78}k_{79} \oplus k_{45}k_{74}k_{75} \oplus k_{45}k_{74}k_{75}k_{77} \oplus k_{45}k_{74}k_{75}k_{76} \oplus k_{45}k_{73} \oplus \\
& k_{45}k_{73}k_{75}k_{78}k_{79} \oplus k_{45}k_{73}k_{74} \oplus k_{45}k_{73}k_{74}k_{78}k_{79} \oplus k_{45}k_{72}k_{73} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{45}k_{72}k_{73}k_{78}k_{79} \oplus k_{45}k_{72}k_{73}k_{75}k_{78}k_{79} \oplus k_{45}k_{72}k_{73}k_{74}k_{78}k_{79} \oplus \\
& k_{45}k_{71}k_{75} \oplus k_{45}k_{71}k_{73}k_{74} \oplus k_{45}k_{71}k_{72} \oplus k_{45}k_{71}k_{72}k_{75}k_{78}k_{79} \oplus \\
& k_{45}k_{71}k_{72}k_{73}k_{74}k_{78}k_{79} \oplus k_{45}k_{69}k_{70}k_{75} \oplus k_{45}k_{69}k_{70}k_{73}k_{74} \oplus k_{45}k_{64} \oplus \\
& k_{45}k_{64}k_{73} \oplus k_{45}k_{64}k_{71}k_{72} \oplus k_{45}k_{64}k_{69}k_{73} \oplus k_{45}k_{64}k_{69}k_{71}k_{72} \oplus \\
& k_{45}k_{64}k_{67}k_{68}k_{73} \oplus k_{45}k_{64}k_{67}k_{68}k_{71}k_{72} \oplus k_{45}k_{63} \oplus k_{45}k_{61}k_{78}k_{79} \oplus \\
& k_{45}k_{61}k_{64} \oplus k_{45}k_{61}k_{64}k_{73} \oplus k_{45}k_{61}k_{64}k_{71}k_{72} \oplus k_{45}k_{61}k_{64}k_{69} \oplus \\
& k_{45}k_{61}k_{64}k_{69}k_{73} \oplus k_{45}k_{61}k_{64}k_{69}k_{71}k_{72} \oplus k_{45}k_{61}k_{64}k_{67}k_{68} \oplus \\
& k_{45}k_{61}k_{64}k_{67}k_{68}k_{73} \oplus k_{45}k_{61}k_{64}k_{67}k_{68}k_{71}k_{72} \oplus k_{45}k_{61}k_{62} \oplus k_{45}k_{60} \oplus \\
& k_{45}k_{60}k_{69} \oplus k_{45}k_{60}k_{67}k_{68} \oplus k_{45}k_{60}k_{64} \oplus k_{45}k_{60}k_{64}k_{69} \oplus k_{45}k_{60}k_{64}k_{67}k_{68} \oplus \\
& k_{45}k_{59}k_{71} \oplus k_{45}k_{59}k_{69}k_{70} \oplus k_{45}k_{59}k_{60}k_{78}k_{79} \oplus k_{45}k_{59}k_{60}k_{64} \oplus \\
& k_{45}k_{59}k_{60}k_{64}k_{73} \oplus k_{45}k_{59}k_{60}k_{64}k_{71}k_{72} \oplus k_{45}k_{59}k_{60}k_{64}k_{69} \oplus \\
& k_{45}k_{59}k_{60}k_{64}k_{69}k_{73} \oplus k_{45}k_{59}k_{60}k_{64}k_{69}k_{71}k_{72} \oplus k_{45}k_{59}k_{60}k_{64}k_{67}k_{68} \oplus \\
& k_{45}k_{59}k_{60}k_{64}k_{67}k_{68}k_{73} \oplus k_{45}k_{59}k_{60}k_{64}k_{67}k_{68}k_{71}k_{72} \oplus k_{45}k_{58}k_{78} \oplus \\
& k_{45}k_{58}k_{77} \oplus k_{45}k_{58}k_{76} \oplus k_{45}k_{58}k_{76}k_{78} \oplus k_{45}k_{58}k_{76}k_{77} \oplus k_{45}k_{58}k_{74}k_{75} \oplus \\
& k_{45}k_{58}k_{74}k_{75}k_{78} \oplus k_{45}k_{58}k_{74}k_{75}k_{77} \oplus k_{45}k_{58}k_{74}k_{75}k_{76} \oplus \\
& k_{45}k_{58}k_{74}k_{75}k_{76}k_{77} \oplus k_{45}k_{58}k_{63} \oplus k_{45}k_{58}k_{61}k_{62} \oplus k_{45}k_{58}k_{59} \oplus \\
& k_{45}k_{58}k_{59}k_{69} \oplus k_{45}k_{58}k_{59}k_{67}k_{68} \oplus k_{45}k_{58}k_{59}k_{64} \oplus k_{45}k_{58}k_{59}k_{64}k_{69} \oplus \\
& k_{45}k_{58}k_{59}k_{64}k_{67}k_{68} \oplus k_{45}k_{57}k_{64}k_{73} \oplus k_{45}k_{57}k_{64}k_{71}k_{72} \oplus k_{45}k_{57}k_{61}k_{64} \oplus \\
& k_{45}k_{57}k_{61}k_{64}k_{73} \oplus k_{45}k_{57}k_{61}k_{64}k_{71}k_{72} \oplus k_{45}k_{57}k_{60} \oplus k_{45}k_{57}k_{60}k_{64} \oplus \\
& k_{45}k_{57}k_{59}k_{60}k_{64} \oplus k_{45}k_{57}k_{59}k_{60}k_{64}k_{73} \oplus k_{45}k_{57}k_{59}k_{60}k_{64}k_{71}k_{72} \oplus \\
& k_{45}k_{57}k_{58} \oplus k_{45}k_{57}k_{58}k_{59}k_{64} \oplus k_{45}k_{56} \oplus k_{45}k_{56}k_{78} \oplus k_{45}k_{56}k_{78}k_{79} \oplus \\
& k_{45}k_{56}k_{77} \oplus k_{45}k_{56}k_{76} \oplus k_{45}k_{56}k_{76}k_{78} \oplus k_{45}k_{56}k_{76}k_{77} \oplus k_{45}k_{56}k_{74}k_{75} \oplus \\
& k_{45}k_{56}k_{74}k_{75}k_{78} \oplus k_{45}k_{56}k_{74}k_{75}k_{77} \oplus k_{45}k_{56}k_{74}k_{75}k_{76} \oplus \\
& k_{45}k_{56}k_{74}k_{75}k_{76}k_{77} \oplus k_{45}k_{56}k_{73} \oplus k_{45}k_{56}k_{71}k_{72} \oplus k_{45}k_{56}k_{64}k_{73} \oplus \\
& k_{45}k_{56}k_{64}k_{71}k_{72} \oplus k_{45}k_{56}k_{63} \oplus k_{45}k_{56}k_{61}k_{64} \oplus k_{45}k_{56}k_{61}k_{64}k_{73} \oplus \\
& k_{45}k_{56}k_{61}k_{64}k_{71}k_{72} \oplus k_{45}k_{56}k_{61}k_{62} \oplus k_{45}k_{56}k_{60} \oplus k_{45}k_{56}k_{60}k_{64} \oplus \\
& k_{45}k_{56}k_{59}k_{60}k_{64} \oplus k_{45}k_{56}k_{59}k_{60}k_{64}k_{73} \oplus k_{45}k_{56}k_{59}k_{60}k_{64}k_{71}k_{72} \oplus \\
& k_{45}k_{56}k_{58}k_{59} \oplus k_{45}k_{56}k_{58}k_{59}k_{64} \oplus k_{45}k_{55}k_{71}k_{75} \oplus k_{45}k_{55}k_{71}k_{73}k_{74} \oplus \\
& k_{45}k_{55}k_{69}k_{70}k_{75} \oplus k_{45}k_{55}k_{69}k_{70}k_{73}k_{74} \oplus k_{45}k_{55}k_{64}k_{73} \oplus \\
& k_{45}k_{55}k_{64}k_{71}k_{72} \oplus k_{45}k_{55}k_{61}k_{64} \oplus k_{45}k_{55}k_{61}k_{64}k_{73} \oplus \\
& k_{45}k_{55}k_{61}k_{64}k_{71}k_{72} \oplus k_{45}k_{55}k_{60} \oplus k_{45}k_{55}k_{60}k_{64} \oplus k_{45}k_{55}k_{59}k_{60}k_{64} \oplus \\
& k_{45}k_{55}k_{59}k_{60}k_{64}k_{73} \oplus k_{45}k_{55}k_{59}k_{60}k_{64}k_{71}k_{72} \oplus k_{45}k_{55}k_{58}k_{59} \oplus \\
& k_{45}k_{55}k_{58}k_{59}k_{64} \oplus k_{45}k_{55}k_{56}k_{64}k_{73} \oplus k_{45}k_{55}k_{56}k_{64}k_{71}k_{72} \oplus \\
& k_{45}k_{55}k_{56}k_{61}k_{64} \oplus k_{45}k_{55}k_{56}k_{61}k_{64}k_{73} \oplus k_{45}k_{55}k_{56}k_{61}k_{64}k_{71}k_{72} \oplus \\
& k_{45}k_{55}k_{56}k_{60} \oplus k_{45}k_{55}k_{56}k_{60}k_{64} \oplus k_{45}k_{55}k_{56}k_{59}k_{60}k_{64} \oplus \\
& k_{45}k_{55}k_{56}k_{59}k_{60}k_{64}k_{73} \oplus k_{45}k_{55}k_{56}k_{59}k_{60}k_{64}k_{71}k_{72} \oplus k_{45}k_{55}k_{56}k_{58}k_{59} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{45}k_{55}k_{56}k_{58}k_{59}k_{64} \oplus k_{45}k_{54}k_{76} \oplus k_{45}k_{54}k_{75} \oplus k_{45}k_{54}k_{74} \oplus k_{45}k_{54}k_{73}k_{75} \oplus \\
& k_{45}k_{54}k_{73}k_{74} \oplus k_{45}k_{54}k_{72}k_{73} \oplus k_{45}k_{54}k_{72}k_{73}k_{75} \oplus k_{45}k_{54}k_{72}k_{73}k_{74} \oplus \\
& k_{45}k_{54}k_{71}k_{72}k_{75} \oplus k_{45}k_{54}k_{71}k_{72}k_{73}k_{74} \oplus k_{45}k_{54}k_{61} \oplus k_{45}k_{54}k_{59}k_{60} \oplus \\
& k_{45}k_{54}k_{56} \oplus k_{45}k_{53} \oplus k_{45}k_{53}k_{76} \oplus k_{45}k_{53}k_{75} \oplus k_{45}k_{53}k_{74} \oplus k_{45}k_{53}k_{73}k_{75} \oplus \\
& k_{45}k_{53}k_{73}k_{74} \oplus k_{45}k_{53}k_{72}k_{73} \oplus k_{45}k_{53}k_{72}k_{73}k_{75} \oplus k_{45}k_{53}k_{72}k_{73}k_{74} \oplus \\
& k_{45}k_{53}k_{71}k_{72}k_{75} \oplus k_{45}k_{53}k_{71}k_{72}k_{73}k_{74} \oplus k_{45}k_{53}k_{61} \oplus k_{45}k_{53}k_{59}k_{60} \oplus \\
& k_{45}k_{53}k_{56} \oplus k_{45}k_{51}k_{58} \oplus k_{45}k_{51}k_{58}k_{76} \oplus k_{45}k_{51}k_{58}k_{74}k_{75} \oplus k_{45}k_{51}k_{56} \oplus \\
& k_{45}k_{51}k_{56}k_{76} \oplus k_{45}k_{51}k_{56}k_{74}k_{75} \oplus k_{45}k_{50} \oplus k_{45}k_{50}k_{76} \oplus k_{45}k_{50}k_{74}k_{75} \oplus \\
& k_{45}k_{50}k_{58} \oplus k_{45}k_{50}k_{58}k_{76} \oplus k_{45}k_{50}k_{58}k_{74}k_{75} \oplus k_{45}k_{50}k_{56} \oplus k_{45}k_{50}k_{56}k_{76} \oplus \\
& k_{45}k_{50}k_{56}k_{74}k_{75} \oplus k_{45}k_{49} \oplus k_{45}k_{49}k_{77} \oplus k_{45}k_{49}k_{76} \oplus k_{45}k_{49}k_{75} \oplus \\
& k_{45}k_{49}k_{75}k_{76} \oplus k_{45}k_{49}k_{74}k_{75} \oplus k_{45}k_{49}k_{73}k_{74} \oplus k_{45}k_{49}k_{58} \oplus k_{45}k_{49}k_{58}k_{78} \oplus \\
& k_{45}k_{49}k_{58}k_{77} \oplus k_{45}k_{49}k_{58}k_{76}k_{77} \oplus k_{45}k_{49}k_{58}k_{75}k_{76} \oplus k_{45}k_{49}k_{56} \oplus \\
& k_{45}k_{49}k_{56}k_{78} \oplus k_{45}k_{49}k_{56}k_{77} \oplus k_{45}k_{49}k_{56}k_{76}k_{77} \oplus k_{45}k_{49}k_{56}k_{75}k_{76} \oplus \\
& k_{45}k_{49}k_{55}k_{75} \oplus k_{45}k_{49}k_{55}k_{73}k_{74} \oplus k_{45}k_{49}k_{54} \oplus k_{45}k_{49}k_{51}k_{58} \oplus \\
& k_{45}k_{49}k_{51}k_{56} \oplus k_{45}k_{49}k_{50} \oplus k_{45}k_{49}k_{50}k_{58} \oplus k_{45}k_{49}k_{50}k_{56} \oplus k_{45}k_{48}k_{78}k_{79} \oplus \\
& k_{45}k_{48}k_{74}k_{78}k_{79} \oplus k_{45}k_{48}k_{73}k_{78}k_{79} \oplus k_{45}k_{48}k_{72}k_{73}k_{78}k_{79} \oplus k_{45}k_{48}k_{71} \oplus \\
& k_{45}k_{48}k_{71}k_{72}k_{78}k_{79} \oplus k_{45}k_{48}k_{69}k_{70} \oplus k_{45}k_{48}k_{60} \oplus k_{45}k_{48}k_{59} \oplus \\
& k_{45}k_{48}k_{58}k_{59} \oplus k_{45}k_{48}k_{57}k_{58} \oplus k_{45}k_{48}k_{55}k_{71} \oplus k_{45}k_{48}k_{55}k_{69}k_{70} \oplus \\
& k_{45}k_{48}k_{54} \oplus k_{45}k_{48}k_{54}k_{74} \oplus k_{45}k_{48}k_{54}k_{73} \oplus k_{45}k_{48}k_{54}k_{72}k_{73} \oplus \\
& k_{45}k_{48}k_{54}k_{71}k_{72} \oplus k_{45}k_{48}k_{53} \oplus k_{45}k_{48}k_{53}k_{74} \oplus k_{45}k_{48}k_{53}k_{73} \oplus \\
& k_{45}k_{48}k_{53}k_{72}k_{73} \oplus k_{45}k_{48}k_{53}k_{71}k_{72} \oplus k_{45}k_{48}k_{49} \oplus k_{45}k_{48}k_{49}k_{55} \oplus \\
& k_{45}k_{47}k_{78}k_{79} \oplus k_{45}k_{47}k_{75}k_{78}k_{79} \oplus k_{45}k_{47}k_{73}k_{74}k_{78}k_{79} \oplus k_{45}k_{47}k_{60} \oplus \\
& k_{45}k_{47}k_{59} \oplus k_{45}k_{47}k_{58}k_{59} \oplus k_{45}k_{47}k_{57}k_{58} \oplus k_{45}k_{47}k_{54} \oplus k_{45}k_{47}k_{54}k_{75} \oplus \\
& k_{45}k_{47}k_{54}k_{73}k_{74} \oplus k_{45}k_{47}k_{53} \oplus k_{45}k_{47}k_{53}k_{75} \oplus k_{45}k_{47}k_{53}k_{73}k_{74} \oplus \\
& k_{45}k_{47}k_{48}k_{76} \oplus k_{45}k_{47}k_{48}k_{75} \oplus k_{45}k_{47}k_{48}k_{74}k_{75} \oplus k_{45}k_{47}k_{48}k_{73}k_{74} \oplus \\
& k_{45}k_{47}k_{48}k_{55} \oplus k_{45}k_{47}k_{48}k_{55}k_{75} \oplus k_{45}k_{47}k_{48}k_{55}k_{73}k_{74} \oplus k_{45}k_{47}k_{48}k_{54} \oplus \\
& k_{45}k_{47}k_{48}k_{49} \oplus k_{45}k_{46} \oplus k_{45}k_{46}k_{75}k_{78}k_{79} \oplus k_{45}k_{46}k_{73} \oplus \\
& k_{45}k_{46}k_{73}k_{74}k_{78}k_{79} \oplus k_{45}k_{46}k_{72} \oplus k_{45}k_{46}k_{71}k_{72} \oplus k_{45}k_{46}k_{70}k_{71} \oplus \\
& k_{45}k_{46}k_{64} \oplus k_{45}k_{46}k_{64}k_{71} \oplus k_{45}k_{46}k_{64}k_{69} \oplus k_{45}k_{46}k_{64}k_{69}k_{70} \oplus \\
& k_{45}k_{46}k_{64}k_{67}k_{68} \oplus k_{45}k_{46}k_{61}k_{64} \oplus k_{45}k_{46}k_{61}k_{64}k_{69} \oplus \\
& k_{45}k_{46}k_{61}k_{64}k_{67}k_{68} \oplus k_{45}k_{46}k_{60} \oplus k_{45}k_{46}k_{60}k_{72} \oplus k_{45}k_{46}k_{60}k_{70}k_{71} \oplus \\
& k_{45}k_{46}k_{59} \oplus k_{45}k_{46}k_{59}k_{72} \oplus k_{45}k_{46}k_{59}k_{70}k_{71} \oplus k_{45}k_{46}k_{59}k_{64} \oplus \\
& k_{45}k_{46}k_{59}k_{60}k_{64} \oplus k_{45}k_{46}k_{59}k_{60}k_{64}k_{69} \oplus k_{45}k_{46}k_{59}k_{60}k_{64}k_{67}k_{68} \oplus \\
& k_{45}k_{46}k_{58}k_{64} \oplus k_{45}k_{46}k_{58}k_{59} \oplus k_{45}k_{46}k_{58}k_{59}k_{72} \oplus k_{45}k_{46}k_{58}k_{59}k_{70}k_{71} \oplus \\
& k_{45}k_{46}k_{57}k_{61}k_{64} \oplus k_{45}k_{46}k_{57}k_{59}k_{60}k_{64} \oplus k_{45}k_{46}k_{57}k_{58} \oplus \\
& k_{45}k_{46}k_{57}k_{58}k_{72} \oplus k_{45}k_{46}k_{57}k_{58}k_{70}k_{71} \oplus k_{45}k_{46}k_{57}k_{58}k_{64} \oplus k_{45}k_{46}k_{56} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{45}k_{46}k_{56}k_{64} \oplus k_{45}k_{46}k_{56}k_{61}k_{64} \oplus k_{45}k_{46}k_{56}k_{59}k_{60}k_{64} \oplus k_{45}k_{46}k_{55}k_{64} \oplus \\
& k_{45}k_{46}k_{55}k_{61}k_{64} \oplus k_{45}k_{46}k_{55}k_{59}k_{60}k_{64} \oplus k_{45}k_{46}k_{55}k_{56}k_{64} \oplus \\
& k_{45}k_{46}k_{55}k_{56}k_{61}k_{64} \oplus k_{45}k_{46}k_{55}k_{56}k_{59}k_{60}k_{64} \oplus k_{45}k_{46}k_{54}k_{75} \oplus \\
& k_{45}k_{46}k_{54}k_{73}k_{74} \oplus k_{45}k_{46}k_{53}k_{75} \oplus k_{45}k_{46}k_{53}k_{73}k_{74} \oplus k_{45}k_{46}k_{48}k_{78}k_{79} \oplus \\
& k_{45}k_{46}k_{48}k_{54} \oplus k_{45}k_{46}k_{48}k_{53} \oplus k_{45}k_{46}k_{47} \oplus k_{45}k_{46}k_{47}k_{60} \oplus k_{45}k_{46}k_{47}k_{59} \oplus \\
& k_{45}k_{46}k_{47}k_{58}k_{59} \oplus k_{45}k_{46}k_{47}k_{57}k_{58} \oplus k_{44}k_{73} \oplus k_{44}k_{72}k_{75} \oplus k_{44}k_{72}k_{73}k_{74} \oplus \\
& k_{44}k_{71}k_{72} \oplus k_{44}k_{70}k_{71}k_{75} \oplus k_{44}k_{70}k_{71}k_{73}k_{74} \oplus k_{44}k_{69} \oplus k_{44}k_{67}k_{68} \oplus \\
& k_{44}k_{64}k_{73} \oplus k_{44}k_{64}k_{71}k_{72} \oplus k_{44}k_{61} \oplus k_{44}k_{61}k_{64}k_{73} \oplus k_{44}k_{61}k_{64}k_{71}k_{72} \oplus \\
& k_{44}k_{60} \oplus k_{44}k_{60}k_{73} \oplus k_{44}k_{60}k_{71}k_{72} \oplus k_{44}k_{60}k_{64} \oplus k_{44}k_{60}k_{64}k_{73} \oplus \\
& k_{44}k_{60}k_{64}k_{71}k_{72} \oplus k_{44}k_{59} \oplus k_{44}k_{59}k_{72} \oplus k_{44}k_{59}k_{70}k_{71} \oplus k_{44}k_{59}k_{64}k_{73} \oplus \\
& k_{44}k_{59}k_{64}k_{71}k_{72} \oplus k_{44}k_{59}k_{60} \oplus k_{44}k_{59}k_{60}k_{64} \oplus k_{44}k_{58}k_{59} \oplus k_{44}k_{58}k_{59}k_{73} \oplus \\
& k_{44}k_{58}k_{59}k_{71}k_{72} \oplus k_{44}k_{57}k_{58}k_{64}k_{73} \oplus k_{44}k_{57}k_{58}k_{64}k_{71}k_{72} \oplus \\
& k_{44}k_{57}k_{58}k_{60}k_{64} \oplus k_{44}k_{57}k_{58}k_{60}k_{64}k_{73} \oplus k_{44}k_{57}k_{58}k_{60}k_{64}k_{71}k_{72} \oplus \\
& k_{44}k_{57}k_{58}k_{59}k_{64} \oplus k_{44}k_{57}k_{58}k_{59}k_{64}k_{73} \oplus k_{44}k_{57}k_{58}k_{59}k_{64}k_{71}k_{72} \oplus \\
& k_{44}k_{55}k_{75} \oplus k_{44}k_{55}k_{73}k_{74} \oplus k_{44}k_{55}k_{72}k_{75} \oplus k_{44}k_{55}k_{72}k_{73}k_{74} \oplus \\
& k_{44}k_{55}k_{70}k_{71}k_{75} \oplus k_{44}k_{55}k_{70}k_{71}k_{73}k_{74} \oplus k_{44}k_{51} \oplus k_{44}k_{50} \oplus k_{44}k_{49} \oplus \\
& k_{44}k_{49}k_{50} \oplus k_{44}k_{48} \oplus k_{44}k_{48}k_{72} \oplus k_{44}k_{48}k_{70}k_{71} \oplus k_{44}k_{48}k_{55} \oplus \\
& k_{44}k_{48}k_{55}k_{72} \oplus k_{44}k_{48}k_{55}k_{70}k_{71} \oplus k_{44}k_{48}k_{49} \oplus k_{44}k_{47}k_{64} \oplus k_{44}k_{47}k_{48} \oplus \\
& k_{44}k_{46} \oplus k_{44}k_{46}k_{64} \oplus k_{44}k_{46}k_{61}k_{64} \oplus k_{44}k_{46}k_{60} \oplus k_{44}k_{46}k_{59}k_{64} \oplus \\
& k_{44}k_{46}k_{58}k_{59} \oplus k_{44}k_{46}k_{58}k_{59}k_{64} \oplus k_{44}k_{46}k_{57}k_{58}k_{64} \oplus \\
& k_{44}k_{46}k_{57}k_{58}k_{60}k_{64} \oplus k_{44}k_{46}k_{57}k_{58}k_{59}k_{64} \oplus k_{44}k_{46}k_{47} \oplus k_{44}k_{45} \oplus \\
& k_{44}k_{45}k_{75} \oplus k_{44}k_{45}k_{73}k_{74} \oplus k_{44}k_{45}k_{60}k_{64} \oplus k_{44}k_{45}k_{60}k_{64}k_{71} \oplus \\
& k_{44}k_{45}k_{60}k_{64}k_{69}k_{70} \oplus k_{44}k_{45}k_{59} \oplus k_{44}k_{45}k_{59}k_{60}k_{64} \oplus k_{44}k_{45}k_{58}k_{60}k_{64} \oplus \\
& k_{44}k_{45}k_{58}k_{59}k_{64} \oplus k_{44}k_{45}k_{58}k_{59}k_{64}k_{71} \oplus k_{44}k_{45}k_{58}k_{59}k_{64}k_{69}k_{70} \oplus \\
& k_{44}k_{45}k_{57}k_{60}k_{64} \oplus k_{44}k_{45}k_{57}k_{58}k_{60}k_{64} \oplus k_{44}k_{45}k_{55}k_{75} \oplus \\
& k_{44}k_{45}k_{55}k_{73}k_{74} \oplus k_{44}k_{45}k_{48} \oplus k_{44}k_{45}k_{48}k_{55} \oplus k_{44}k_{45}k_{46}k_{64} \oplus k_{43} \oplus \\
& k_{43}k_{74} \oplus k_{43}k_{72}k_{73} \oplus k_{43}k_{47} \oplus k_{42} \oplus k_{42}k_{75} \oplus k_{42}k_{73} \oplus k_{42}k_{73}k_{74} \oplus \\
& k_{42}k_{72} \oplus k_{42}k_{71}k_{72} \oplus k_{42}k_{70}k_{71} \oplus k_{42}k_{64}k_{74} \oplus k_{42}k_{64}k_{71}k_{72} \oplus \\
& k_{42}k_{64}k_{70}k_{71}k_{73} \oplus k_{42}k_{64}k_{70}k_{71}k_{72} \oplus k_{42}k_{63} \oplus k_{42}k_{62} \oplus k_{42}k_{61}k_{73} \oplus \\
& k_{42}k_{61}k_{71}k_{72} \oplus k_{42}k_{61}k_{64} \oplus k_{42}k_{61}k_{64}k_{74} \oplus k_{42}k_{61}k_{64}k_{73} \oplus k_{42}k_{61}k_{64}k_{72} \oplus \\
& k_{42}k_{61}k_{64}k_{70}k_{71} \oplus k_{42}k_{61}k_{64}k_{70}k_{71}k_{73} \oplus k_{42}k_{61}k_{64}k_{70}k_{71}k_{72} \oplus k_{42}k_{60} \oplus \\
& k_{42}k_{60}k_{72} \oplus k_{42}k_{60}k_{70}k_{71} \oplus k_{42}k_{60}k_{64} \oplus k_{42}k_{60}k_{64}k_{72} \oplus k_{42}k_{60}k_{64}k_{70}k_{71} \oplus \\
& k_{42}k_{59}k_{64} \oplus k_{42}k_{59}k_{61}k_{64} \oplus k_{42}k_{59}k_{60} \oplus k_{42}k_{59}k_{60}k_{73} \oplus k_{42}k_{59}k_{60}k_{71}k_{72} \oplus \\
& k_{42}k_{59}k_{60}k_{64}k_{74} \oplus k_{42}k_{59}k_{60}k_{64}k_{73} \oplus k_{42}k_{59}k_{60}k_{64}k_{72} \oplus \\
& k_{42}k_{59}k_{60}k_{64}k_{70}k_{71} \oplus k_{42}k_{59}k_{60}k_{64}k_{70}k_{71}k_{73} \oplus k_{42}k_{59}k_{60}k_{64}k_{70}k_{71}k_{72} \oplus \\
& k_{42}k_{58}k_{72} \oplus k_{42}k_{58}k_{70}k_{71} \oplus k_{42}k_{58}k_{59} \oplus k_{42}k_{58}k_{59}k_{72} \oplus k_{42}k_{58}k_{59}k_{70}k_{71} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{42}k_{58}k_{59}k_{64} \oplus k_{42}k_{58}k_{59}k_{64}k_{72} \oplus k_{42}k_{58}k_{59}k_{64}k_{70}k_{71} \oplus k_{42}k_{57}k_{58}k_{64} \oplus \\
& k_{42}k_{57}k_{58}k_{61}k_{64} \oplus k_{42}k_{57}k_{58}k_{59}k_{60}k_{64} \oplus k_{42}k_{56}k_{72} \oplus k_{42}k_{56}k_{70}k_{71} \oplus \\
& k_{42}k_{48} \oplus k_{42}k_{47}k_{64} \oplus k_{42}k_{47}k_{61}k_{64} \oplus k_{42}k_{47}k_{59}k_{60}k_{64} \oplus k_{42}k_{46} \oplus \\
& k_{42}k_{46}k_{64}k_{72} \oplus k_{42}k_{46}k_{64}k_{70}k_{71} \oplus k_{42}k_{46}k_{61} \oplus k_{42}k_{46}k_{61}k_{64} \oplus \\
& k_{42}k_{46}k_{61}k_{64}k_{72} \oplus k_{42}k_{46}k_{61}k_{64}k_{70}k_{71} \oplus k_{42}k_{46}k_{59}k_{60} \oplus \\
& k_{42}k_{46}k_{59}k_{60}k_{64} \oplus k_{42}k_{46}k_{59}k_{60}k_{64}k_{72} \oplus k_{42}k_{46}k_{59}k_{60}k_{64}k_{70}k_{71} \oplus \\
& k_{42}k_{45} \oplus k_{42}k_{45}k_{64}k_{73} \oplus k_{42}k_{45}k_{64}k_{71}k_{72} \oplus k_{42}k_{45}k_{61}k_{64} \oplus \\
& k_{42}k_{45}k_{61}k_{64}k_{73} \oplus k_{42}k_{45}k_{61}k_{64}k_{71}k_{72} \oplus k_{42}k_{45}k_{60} \oplus k_{42}k_{45}k_{60}k_{64} \oplus \\
& k_{42}k_{45}k_{59}k_{60}k_{64} \oplus k_{42}k_{45}k_{59}k_{60}k_{64}k_{73} \oplus k_{42}k_{45}k_{59}k_{60}k_{64}k_{71}k_{72} \oplus \\
& k_{42}k_{45}k_{58} \oplus k_{42}k_{45}k_{58}k_{59} \oplus k_{42}k_{45}k_{58}k_{59}k_{64} \oplus k_{42}k_{45}k_{56} \oplus k_{42}k_{45}k_{46}k_{64} \oplus \\
& k_{42}k_{45}k_{46}k_{61}k_{64} \oplus k_{42}k_{45}k_{46}k_{59}k_{60}k_{64} \oplus k_{42}k_{44} \oplus k_{42}k_{43}k_{69} \oplus \\
& k_{42}k_{43}k_{67}k_{68} \oplus k_{41} \oplus k_{41}k_{64} \oplus k_{41}k_{61} \oplus k_{40} \oplus k_{40}k_{79} \oplus k_{40}k_{77}k_{78} \oplus \\
& k_{40}k_{74} \oplus k_{40}k_{72}k_{78}k_{79} \oplus k_{40}k_{72}k_{73} \oplus k_{40}k_{70}k_{71}k_{78}k_{79} \oplus k_{40}k_{64} \oplus k_{40}k_{60} \oplus \\
& k_{40}k_{54}k_{72} \oplus k_{40}k_{54}k_{70}k_{71} \oplus k_{40}k_{53}k_{72} \oplus k_{40}k_{53}k_{70}k_{71} \oplus k_{40}k_{52} \oplus k_{40}k_{51} \oplus \\
& k_{40}k_{50} \oplus k_{40}k_{49} \oplus k_{40}k_{49}k_{50} \oplus k_{40}k_{48}k_{49} \oplus k_{40}k_{47} \oplus k_{40}k_{47}k_{48} \oplus \\
& k_{40}k_{45}k_{78}k_{79} \oplus k_{40}k_{45}k_{54} \oplus k_{40}k_{45}k_{53} \oplus k_{39} \oplus k_{39}k_{79} \oplus k_{39}k_{78} \oplus k_{39}k_{77} \oplus \\
& k_{39}k_{77}k_{78} \oplus k_{39}k_{76}k_{77} \oplus k_{39}k_{75}k_{76} \oplus k_{39}k_{74} \oplus k_{39}k_{72}k_{73} \oplus k_{39}k_{65}k_{79} \oplus \\
& k_{39}k_{65}k_{77}k_{78} \oplus k_{39}k_{65}k_{74} \oplus k_{39}k_{65}k_{72}k_{73} \oplus k_{39}k_{64}k_{65} \oplus k_{39}k_{63}k_{64}k_{79} \oplus \\
& k_{39}k_{63}k_{64}k_{77}k_{78} \oplus k_{39}k_{63}k_{64}k_{74} \oplus k_{39}k_{63}k_{64}k_{72}k_{73} \oplus k_{39}k_{61}k_{62}k_{64} \oplus \\
& k_{39}k_{60} \oplus k_{39}k_{60}k_{76} \oplus k_{39}k_{60}k_{74} \oplus k_{39}k_{60}k_{74}k_{75} \oplus k_{39}k_{60}k_{72}k_{73} \oplus \\
& k_{39}k_{60}k_{65} \oplus k_{39}k_{60}k_{63}k_{64} \oplus k_{39}k_{58}k_{59} \oplus k_{39}k_{52} \oplus k_{39}k_{52}k_{65} \oplus \\
& k_{39}k_{52}k_{63}k_{64} \oplus k_{39}k_{51}k_{65} \oplus k_{39}k_{51}k_{63}k_{64} \oplus k_{39}k_{50}k_{65} \oplus k_{39}k_{50}k_{63}k_{64} \oplus \\
& k_{39}k_{49} \oplus k_{39}k_{49}k_{65} \oplus k_{39}k_{49}k_{63}k_{64} \oplus k_{39}k_{49}k_{60} \oplus k_{39}k_{49}k_{50} \oplus \\
& k_{39}k_{49}k_{50}k_{65} \oplus k_{39}k_{49}k_{50}k_{63}k_{64} \oplus k_{39}k_{48}k_{49} \oplus k_{39}k_{48}k_{49}k_{65} \oplus \\
& k_{39}k_{48}k_{49}k_{63}k_{64} \oplus k_{39}k_{47} \oplus k_{39}k_{47}k_{65} \oplus k_{39}k_{47}k_{63}k_{64} \oplus k_{39}k_{47}k_{60} \oplus \\
& k_{39}k_{47}k_{48} \oplus k_{39}k_{47}k_{48}k_{65} \oplus k_{39}k_{47}k_{48}k_{63}k_{64} \oplus k_{39}k_{40}k_{64} \oplus k_{38}k_{79} \oplus \\
& k_{38}k_{78}k_{79} \oplus k_{38}k_{77}k_{78} \oplus k_{38}k_{74} \oplus k_{38}k_{72}k_{73} \oplus k_{38}k_{66}k_{79} \oplus k_{38}k_{66}k_{77}k_{78} \oplus \\
& k_{38}k_{66}k_{74} \oplus k_{38}k_{66}k_{72}k_{73} \oplus k_{38}k_{64} \oplus k_{38}k_{64}k_{66} \oplus k_{38}k_{64}k_{65} \oplus \\
& k_{38}k_{64}k_{65}k_{79} \oplus k_{38}k_{64}k_{65}k_{77}k_{78} \oplus k_{38}k_{64}k_{65}k_{74} \oplus k_{38}k_{64}k_{65}k_{72}k_{73} \oplus \\
& k_{38}k_{62} \oplus k_{38}k_{60}k_{66} \oplus k_{38}k_{60}k_{64}k_{65} \oplus k_{38}k_{60}k_{61} \oplus k_{38}k_{58} \oplus k_{38}k_{58}k_{59} \oplus \\
& k_{38}k_{53} \oplus k_{38}k_{52} \oplus k_{38}k_{52}k_{66} \oplus k_{38}k_{52}k_{64}k_{65} \oplus k_{38}k_{51} \oplus k_{38}k_{51}k_{66} \oplus \\
& k_{38}k_{51}k_{64}k_{65} \oplus k_{38}k_{50} \oplus k_{38}k_{50}k_{66} \oplus k_{38}k_{50}k_{64}k_{65} \oplus k_{38}k_{49} \oplus k_{38}k_{49}k_{66} \oplus \\
& k_{38}k_{49}k_{64}k_{65} \oplus k_{38}k_{49}k_{50} \oplus k_{38}k_{49}k_{50}k_{66} \oplus k_{38}k_{49}k_{50}k_{64}k_{65} \oplus k_{38}k_{48}k_{49} \oplus \\
& k_{38}k_{48}k_{49}k_{66} \oplus k_{38}k_{48}k_{49}k_{64}k_{65} \oplus k_{38}k_{47} \oplus k_{38}k_{47}k_{66} \oplus k_{38}k_{47}k_{64}k_{65} \oplus \\
& k_{38}k_{47}k_{48} \oplus k_{38}k_{47}k_{48}k_{66} \oplus k_{38}k_{47}k_{48}k_{64}k_{65} \oplus k_{38}k_{39}k_{79} \oplus k_{38}k_{39}k_{77}k_{78} \oplus \\
& k_{38}k_{39}k_{74} \oplus k_{38}k_{39}k_{72}k_{73} \oplus k_{38}k_{39}k_{64} \oplus k_{38}k_{39}k_{60} \oplus k_{38}k_{39}k_{52} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{38}k_{39}k_{51} \oplus k_{38}k_{39}k_{50} \oplus k_{38}k_{39}k_{49} \oplus k_{38}k_{39}k_{49}k_{50} \oplus k_{38}k_{39}k_{48}k_{49} \oplus \\
& k_{38}k_{39}k_{47} \oplus k_{38}k_{39}k_{47}k_{48} \oplus k_{37} \oplus k_{37}k_{52} \oplus k_{37}k_{50}k_{51} \oplus k_{36}k_{79} \oplus k_{36}k_{77} \oplus \\
& k_{36}k_{76} \oplus k_{36}k_{76}k_{77}k_{79} \oplus k_{36}k_{76}k_{77}k_{78} \oplus k_{36}k_{75}k_{76} \oplus k_{36}k_{74}k_{75} \oplus k_{36}k_{73} \oplus \\
& k_{36}k_{72} \oplus k_{36}k_{71}k_{72} \oplus k_{36}k_{70}k_{71} \oplus k_{36}k_{68} \oplus k_{36}k_{68}k_{79} \oplus k_{36}k_{68}k_{77}k_{78} \oplus \\
& k_{36}k_{67} \oplus k_{36}k_{66} \oplus k_{36}k_{65} \oplus k_{36}k_{64} \oplus k_{36}k_{64}k_{66} \oplus k_{36}k_{64}k_{65} \oplus k_{36}k_{63} \oplus \\
& k_{36}k_{63}k_{64} \oplus k_{36}k_{63}k_{64}k_{66} \oplus k_{36}k_{63}k_{64}k_{65} \oplus k_{36}k_{61} \oplus k_{36}k_{61}k_{73} \oplus \\
& k_{36}k_{61}k_{71}k_{72} \oplus k_{36}k_{61}k_{62} \oplus k_{36}k_{60}k_{77} \oplus k_{36}k_{60}k_{75}k_{76} \oplus k_{36}k_{60}k_{64} \oplus \\
& k_{36}k_{60}k_{61} \oplus k_{36}k_{59} \oplus k_{36}k_{59}k_{60}k_{73} \oplus k_{36}k_{59}k_{60}k_{71}k_{72} \oplus k_{36}k_{58}k_{72} \oplus \\
& k_{36}k_{58}k_{70}k_{71} \oplus k_{36}k_{56}k_{72} \oplus k_{36}k_{56}k_{70}k_{71} \oplus k_{36}k_{54} \oplus k_{36}k_{52}k_{78} \oplus \\
& k_{36}k_{52}k_{76}k_{77} \oplus k_{36}k_{52}k_{68} \oplus k_{36}k_{51}k_{79} \oplus k_{36}k_{51}k_{77}k_{78} \oplus k_{36}k_{51}k_{52} \oplus \\
& k_{36}k_{50} \oplus k_{36}k_{50}k_{76} \oplus k_{36}k_{50}k_{75} \oplus k_{36}k_{50}k_{74} \oplus k_{36}k_{50}k_{74}k_{75} \oplus \\
& k_{36}k_{50}k_{73}k_{74} \oplus k_{36}k_{50}k_{72}k_{73} \oplus k_{36}k_{50}k_{61} \oplus k_{36}k_{50}k_{60} \oplus k_{36}k_{50}k_{59}k_{60} \oplus \\
& k_{36}k_{50}k_{51} \oplus k_{36}k_{49} \oplus k_{36}k_{49}k_{50} \oplus k_{36}k_{48}k_{50} \oplus k_{36}k_{48}k_{49}k_{76} \oplus \\
& k_{36}k_{48}k_{49}k_{75} \oplus k_{36}k_{48}k_{49}k_{74} \oplus k_{36}k_{48}k_{49}k_{74}k_{75} \oplus k_{36}k_{48}k_{49}k_{73}k_{74} \oplus \\
& k_{36}k_{48}k_{49}k_{72}k_{73} \oplus k_{36}k_{48}k_{49}k_{61} \oplus k_{36}k_{48}k_{49}k_{59}k_{60} \oplus k_{36}k_{47}k_{50} \oplus \\
& k_{36}k_{47}k_{48}k_{49} \oplus k_{36}k_{46} \oplus k_{36}k_{46}k_{61} \oplus k_{36}k_{46}k_{59}k_{60} \oplus k_{36}k_{45} \oplus k_{36}k_{45}k_{58} \oplus \\
& k_{36}k_{45}k_{56} \oplus k_{36}k_{44} \oplus k_{36}k_{40} \oplus k_{36}k_{39} \oplus k_{36}k_{39}k_{65} \oplus k_{36}k_{39}k_{64} \oplus \\
& k_{36}k_{39}k_{63}k_{64} \oplus k_{36}k_{38} \oplus k_{36}k_{38}k_{66} \oplus k_{36}k_{38}k_{64}k_{65} \oplus k_{36}k_{38}k_{39} \oplus \\
& k_{36}k_{37}k_{62} \oplus k_{36}k_{37}k_{60}k_{61} \oplus k_{35} \oplus k_{35}k_{76} \oplus k_{35}k_{75} \oplus k_{35}k_{74} \oplus k_{35}k_{74}k_{75} \oplus \\
& k_{35}k_{73} \oplus k_{35}k_{73}k_{74} \oplus k_{35}k_{72}k_{73} \oplus k_{35}k_{71}k_{72} \oplus k_{35}k_{64} \oplus k_{35}k_{60} \oplus k_{35}k_{58} \oplus \\
& k_{35}k_{57} \oplus k_{35}k_{53} \oplus k_{35}k_{52} \oplus k_{35}k_{51}k_{52} \oplus k_{35}k_{50}k_{51} \oplus k_{35}k_{49} \oplus k_{35}k_{47} \oplus \\
& k_{35}k_{46} \oplus k_{35}k_{46}k_{47} \oplus k_{35}k_{38} \oplus k_{35}k_{36} \oplus k_{35}k_{36}k_{52} \oplus k_{35}k_{36}k_{50}k_{51} \oplus \\
& k_{35}k_{36}k_{37} \oplus k_{34} \oplus k_{34}k_{76} \oplus k_{34}k_{76}k_{77} \oplus k_{34}k_{75} \oplus k_{34}k_{74} \oplus k_{34}k_{74}k_{78} \oplus \\
& k_{34}k_{74}k_{76}k_{77} \oplus k_{34}k_{74}k_{75}k_{77} \oplus k_{34}k_{74}k_{75}k_{76} \oplus k_{34}k_{73} \oplus k_{34}k_{73}k_{78} \oplus \\
& k_{34}k_{73}k_{77} \oplus k_{34}k_{73}k_{76} \oplus k_{34}k_{73}k_{74} \oplus k_{34}k_{73}k_{74}k_{76} \oplus k_{34}k_{73}k_{74}k_{75}k_{77} \oplus \\
& k_{34}k_{73}k_{74}k_{75}k_{76} \oplus k_{34}k_{72}k_{78}k_{79} \oplus k_{34}k_{72}k_{73} \oplus k_{34}k_{72}k_{73}k_{78} \oplus \\
& k_{34}k_{72}k_{73}k_{76}k_{77} \oplus k_{34}k_{71} \oplus k_{34}k_{71}k_{72} \oplus k_{34}k_{71}k_{72}k_{78} \oplus k_{34}k_{71}k_{72}k_{77} \oplus \\
& k_{34}k_{71}k_{72}k_{76} \oplus k_{34}k_{71}k_{72}k_{74}k_{75} \oplus k_{34}k_{71}k_{72}k_{74}k_{75}k_{77} \oplus \\
& k_{34}k_{71}k_{72}k_{74}k_{75}k_{76} \oplus k_{34}k_{70}k_{71}k_{78}k_{79} \oplus k_{34}k_{69}k_{70} \oplus k_{34}k_{64}k_{73} \oplus \\
& k_{34}k_{64}k_{72} \oplus k_{34}k_{64}k_{72}k_{73} \oplus k_{34}k_{64}k_{71}k_{73} \oplus k_{34}k_{64}k_{71}k_{72} \oplus k_{34}k_{64}k_{70}k_{71} \oplus \\
& k_{34}k_{64}k_{70}k_{71}k_{73} \oplus k_{34}k_{64}k_{70}k_{71}k_{72} \oplus k_{34}k_{64}k_{69} \oplus k_{34}k_{64}k_{69}k_{74} \oplus \\
& k_{34}k_{64}k_{69}k_{73} \oplus k_{34}k_{64}k_{69}k_{72} \oplus k_{34}k_{64}k_{69}k_{70}k_{73} \oplus k_{34}k_{64}k_{69}k_{70}k_{71} \oplus \\
& k_{34}k_{64}k_{69}k_{70}k_{71}k_{73} \oplus k_{34}k_{64}k_{67}k_{68} \oplus k_{34}k_{64}k_{67}k_{68}k_{74} \oplus \\
& k_{34}k_{64}k_{67}k_{68}k_{73} \oplus k_{34}k_{64}k_{67}k_{68}k_{72} \oplus k_{34}k_{64}k_{67}k_{68}k_{70}k_{71} \oplus \\
& k_{34}k_{64}k_{67}k_{68}k_{70}k_{71}k_{73} \oplus k_{34}k_{64}k_{67}k_{68}k_{70}k_{71}k_{72} \oplus k_{34}k_{63} \oplus k_{34}k_{63}k_{73} \oplus \\
& k_{34}k_{63}k_{71}k_{72} \oplus k_{34}k_{61}k_{62} \oplus k_{34}k_{61}k_{62}k_{73} \oplus k_{34}k_{61}k_{62}k_{71}k_{72} \oplus k_{34}k_{60} \oplus
\end{aligned}$$



$$\begin{aligned}
& k_{34}k_{60}k_{73} \oplus k_{34}k_{60}k_{71}k_{72} \oplus k_{34}k_{59} \oplus k_{34}k_{59}k_{64}k_{73} \oplus k_{34}k_{59}k_{64}k_{71}k_{72} \oplus \\
& k_{34}k_{59}k_{64}k_{69} \oplus k_{34}k_{59}k_{64}k_{67}k_{68} \oplus k_{34}k_{58} \oplus k_{34}k_{58}k_{64} \oplus k_{34}k_{58}k_{64}k_{73} \oplus \\
& k_{34}k_{58}k_{64}k_{71}k_{72} \oplus k_{34}k_{58}k_{59} \oplus k_{34}k_{58}k_{59}k_{73} \oplus k_{34}k_{58}k_{59}k_{71}k_{72} \oplus k_{34}k_{57} \oplus \\
& k_{34}k_{57}k_{64}k_{74} \oplus k_{34}k_{57}k_{64}k_{72} \oplus k_{34}k_{57}k_{64}k_{71}k_{72} \oplus k_{34}k_{57}k_{64}k_{70}k_{71} \oplus \\
& k_{34}k_{57}k_{64}k_{70}k_{71}k_{73} \oplus k_{34}k_{57}k_{64}k_{70}k_{71}k_{72} \oplus k_{34}k_{57}k_{59}k_{64} \oplus k_{34}k_{57}k_{58} \oplus \\
& k_{34}k_{57}k_{58}k_{64} \oplus k_{34}k_{57}k_{58}k_{64}k_{73} \oplus k_{34}k_{57}k_{58}k_{64}k_{71}k_{72} \oplus \\
& k_{34}k_{57}k_{58}k_{64}k_{69} \oplus k_{34}k_{57}k_{58}k_{64}k_{67}k_{68} \oplus k_{34}k_{56} \oplus k_{34}k_{56}k_{64}k_{74} \oplus \\
& k_{34}k_{56}k_{64}k_{73} \oplus k_{34}k_{56}k_{64}k_{72} \oplus k_{34}k_{56}k_{64}k_{70}k_{71} \oplus k_{34}k_{56}k_{64}k_{70}k_{71}k_{73} \oplus \\
& k_{34}k_{56}k_{64}k_{70}k_{71}k_{72} \oplus k_{34}k_{56}k_{59}k_{64} \oplus k_{34}k_{56}k_{57}k_{58}k_{64} \oplus k_{34}k_{55}k_{78} \oplus \\
& k_{34}k_{55}k_{76}k_{77} \oplus k_{34}k_{55}k_{74}k_{78} \oplus k_{34}k_{55}k_{74}k_{76}k_{77} \oplus k_{34}k_{55}k_{72}k_{73}k_{78} \oplus \\
& k_{34}k_{55}k_{72}k_{73}k_{76}k_{77} \oplus k_{34}k_{55}k_{64} \oplus k_{34}k_{55}k_{64}k_{73} \oplus k_{34}k_{55}k_{64}k_{72} \oplus \\
& k_{34}k_{55}k_{64}k_{72}k_{73} \oplus k_{34}k_{55}k_{64}k_{70}k_{71} \oplus k_{34}k_{55}k_{64}k_{70}k_{71}k_{73} \oplus \\
& k_{34}k_{55}k_{64}k_{70}k_{71}k_{72} \oplus k_{34}k_{55}k_{59}k_{64} \oplus k_{34}k_{55}k_{57}k_{58}k_{64} \oplus k_{34}k_{55}k_{56}k_{64} \oplus \\
& k_{34}k_{55}k_{56}k_{64}k_{74} \oplus k_{34}k_{55}k_{56}k_{64}k_{73} \oplus k_{34}k_{55}k_{56}k_{64}k_{72} \oplus \\
& k_{34}k_{55}k_{56}k_{64}k_{70}k_{71} \oplus k_{34}k_{55}k_{56}k_{64}k_{70}k_{71}k_{73} \oplus k_{34}k_{55}k_{56}k_{64}k_{70}k_{71}k_{72} \oplus \\
& k_{34}k_{55}k_{56}k_{59}k_{64} \oplus k_{34}k_{55}k_{56}k_{57}k_{58}k_{64} \oplus k_{34}k_{54}k_{72} \oplus k_{34}k_{54}k_{70}k_{71} \oplus \\
& k_{34}k_{53}k_{72} \oplus k_{34}k_{53}k_{70}k_{71} \oplus k_{34}k_{51} \oplus k_{34}k_{51}k_{74} \oplus k_{34}k_{51}k_{73} \oplus \\
& k_{34}k_{51}k_{72}k_{73} \oplus k_{34}k_{51}k_{71}k_{72} \oplus k_{34}k_{51}k_{55} \oplus k_{34}k_{51}k_{55}k_{74} \oplus \\
& k_{34}k_{51}k_{55}k_{72}k_{73} \oplus k_{34}k_{50} \oplus k_{34}k_{50}k_{76} \oplus k_{34}k_{50}k_{74}k_{75} \oplus k_{34}k_{50}k_{73}k_{76} \oplus \\
& k_{34}k_{50}k_{73}k_{74}k_{75} \oplus k_{34}k_{50}k_{71}k_{72}k_{76} \oplus k_{34}k_{50}k_{71}k_{72}k_{74}k_{75} \oplus k_{34}k_{49}k_{77} \oplus \\
& k_{34}k_{49}k_{75} \oplus k_{34}k_{49}k_{75}k_{76} \oplus k_{34}k_{49}k_{73} \oplus k_{34}k_{49}k_{73}k_{77} \oplus k_{34}k_{49}k_{73}k_{75}k_{76} \oplus \\
& k_{34}k_{49}k_{73}k_{74} \oplus k_{34}k_{49}k_{71}k_{72} \oplus k_{34}k_{49}k_{71}k_{72}k_{77} \oplus k_{34}k_{49}k_{71}k_{72}k_{75}k_{76} \oplus \\
& k_{34}k_{49}k_{50} \oplus k_{34}k_{49}k_{50}k_{73} \oplus k_{34}k_{49}k_{50}k_{71}k_{72} \oplus k_{34}k_{48}k_{76} \oplus k_{34}k_{48}k_{74}k_{75} \oplus \\
& k_{34}k_{48}k_{49} \oplus k_{34}k_{48}k_{49}k_{73} \oplus k_{34}k_{48}k_{49}k_{71}k_{72} \oplus k_{34}k_{47} \oplus k_{34}k_{47}k_{78} \oplus \\
& k_{34}k_{47}k_{76}k_{77} \oplus k_{34}k_{47}k_{64}k_{69} \oplus k_{34}k_{47}k_{64}k_{67}k_{68} \oplus k_{34}k_{47}k_{57}k_{64} \oplus \\
& k_{34}k_{47}k_{56}k_{64} \oplus k_{34}k_{47}k_{55}k_{78} \oplus k_{34}k_{47}k_{55}k_{76}k_{77} \oplus k_{34}k_{47}k_{55}k_{56}k_{64} \oplus \\
& k_{34}k_{47}k_{51} \oplus k_{34}k_{47}k_{51}k_{55} \oplus k_{34}k_{47}k_{48} \oplus k_{34}k_{47}k_{48}k_{50} \oplus k_{34}k_{47}k_{48}k_{49} \oplus \\
& k_{34}k_{46} \oplus k_{34}k_{46}k_{78} \oplus k_{34}k_{46}k_{77} \oplus k_{34}k_{46}k_{76} \oplus k_{34}k_{46}k_{74}k_{75} \oplus \\
& k_{34}k_{46}k_{74}k_{75}k_{77} \oplus k_{34}k_{46}k_{74}k_{75}k_{76} \oplus k_{34}k_{46}k_{64} \oplus k_{34}k_{46}k_{64}k_{72} \oplus \\
& k_{34}k_{46}k_{64}k_{71} \oplus k_{34}k_{46}k_{64}k_{70}k_{71} \oplus k_{34}k_{46}k_{64}k_{69} \oplus k_{34}k_{46}k_{64}k_{69}k_{72} \oplus \\
& k_{34}k_{46}k_{64}k_{69}k_{70} \oplus k_{34}k_{46}k_{64}k_{69}k_{70}k_{71} \oplus k_{34}k_{46}k_{64}k_{67}k_{68} \oplus \\
& k_{34}k_{46}k_{64}k_{67}k_{68}k_{72} \oplus k_{34}k_{46}k_{64}k_{67}k_{68}k_{70}k_{71} \oplus k_{34}k_{46}k_{63} \oplus \\
& k_{34}k_{46}k_{61}k_{62} \oplus k_{34}k_{46}k_{60} \oplus k_{34}k_{46}k_{59}k_{64} \oplus k_{34}k_{46}k_{58}k_{64} \oplus k_{34}k_{46}k_{58}k_{59} \oplus \\
& k_{34}k_{46}k_{57}k_{64}k_{72} \oplus k_{34}k_{46}k_{57}k_{64}k_{70}k_{71} \oplus k_{34}k_{46}k_{57}k_{58}k_{64} \oplus \\
& k_{34}k_{46}k_{56}k_{64} \oplus k_{34}k_{46}k_{56}k_{64}k_{72} \oplus k_{34}k_{46}k_{56}k_{64}k_{70}k_{71} \oplus k_{34}k_{46}k_{55}k_{64} \oplus \\
& k_{34}k_{46}k_{55}k_{64}k_{72} \oplus k_{34}k_{46}k_{55}k_{64}k_{70}k_{71} \oplus k_{34}k_{46}k_{55}k_{56}k_{64} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{34}k_{46}k_{55}k_{56}k_{64}k_{72} \oplus k_{34}k_{46}k_{55}k_{56}k_{64}k_{70}k_{71} \oplus k_{34}k_{46}k_{51} \oplus \\
& k_{34}k_{46}k_{50}k_{76} \oplus k_{34}k_{46}k_{50}k_{74}k_{75} \oplus k_{34}k_{46}k_{49} \oplus k_{34}k_{46}k_{49}k_{77} \oplus \\
& k_{34}k_{46}k_{49}k_{75}k_{76} \oplus k_{34}k_{46}k_{49}k_{50} \oplus k_{34}k_{46}k_{48}k_{49} \oplus k_{34}k_{46}k_{47} \oplus \\
& k_{34}k_{45}k_{78}k_{79} \oplus k_{34}k_{45}k_{64} \oplus k_{34}k_{45}k_{64}k_{73} \oplus k_{34}k_{45}k_{64}k_{71}k_{72} \oplus \\
& k_{34}k_{45}k_{64}k_{69} \oplus k_{34}k_{45}k_{64}k_{69}k_{73} \oplus k_{34}k_{45}k_{64}k_{69}k_{71}k_{72} \oplus \\
& k_{34}k_{45}k_{64}k_{67}k_{68} \oplus k_{34}k_{45}k_{64}k_{67}k_{68}k_{73} \oplus k_{34}k_{45}k_{64}k_{67}k_{68}k_{71}k_{72} \oplus \\
& k_{34}k_{45}k_{57}k_{64} \oplus k_{34}k_{45}k_{57}k_{64}k_{73} \oplus k_{34}k_{45}k_{57}k_{64}k_{71}k_{72} \oplus k_{34}k_{45}k_{56}k_{64} \oplus \\
& k_{34}k_{45}k_{56}k_{64}k_{73} \oplus k_{34}k_{45}k_{56}k_{64}k_{71}k_{72} \oplus k_{34}k_{45}k_{55}k_{64} \oplus \\
& k_{34}k_{45}k_{55}k_{64}k_{73} \oplus k_{34}k_{45}k_{55}k_{64}k_{71}k_{72} \oplus k_{34}k_{45}k_{54} \oplus k_{34}k_{45}k_{53} \oplus \\
& k_{34}k_{45}k_{46}k_{64} \oplus k_{34}k_{45}k_{46}k_{64}k_{69} \oplus k_{34}k_{45}k_{46}k_{64}k_{67}k_{68} \oplus \\
& k_{34}k_{45}k_{46}k_{57}k_{64} \oplus k_{34}k_{45}k_{46}k_{56}k_{64} \oplus k_{34}k_{45}k_{46}k_{55}k_{64} \oplus \\
& k_{34}k_{45}k_{46}k_{55}k_{56}k_{64} \oplus k_{34}k_{44} \oplus k_{34}k_{44}k_{64}k_{73} \oplus k_{34}k_{44}k_{64}k_{71}k_{72} \oplus \\
& k_{34}k_{44}k_{46}k_{64} \oplus k_{34}k_{42} \oplus k_{34}k_{42}k_{73} \oplus k_{34}k_{42}k_{71}k_{72} \oplus k_{34}k_{42}k_{64} \oplus \\
& k_{34}k_{42}k_{64}k_{74} \oplus k_{34}k_{42}k_{64}k_{73} \oplus k_{34}k_{42}k_{64}k_{72} \oplus k_{34}k_{42}k_{64}k_{70}k_{71} \oplus \\
& k_{34}k_{42}k_{64}k_{70}k_{71}k_{73} \oplus k_{34}k_{42}k_{64}k_{70}k_{71}k_{72} \oplus k_{34}k_{42}k_{59}k_{64} \oplus \\
& k_{34}k_{42}k_{57}k_{58}k_{64} \oplus k_{34}k_{42}k_{47}k_{64} \oplus k_{34}k_{42}k_{46} \oplus k_{34}k_{42}k_{46}k_{64} \oplus \\
& k_{34}k_{42}k_{46}k_{64}k_{72} \oplus k_{34}k_{42}k_{46}k_{64}k_{70}k_{71} \oplus k_{34}k_{42}k_{45}k_{64} \oplus \\
& k_{34}k_{42}k_{45}k_{64}k_{73} \oplus k_{34}k_{42}k_{45}k_{64}k_{71}k_{72} \oplus k_{34}k_{42}k_{45}k_{46}k_{64} \oplus k_{34}k_{36}k_{73} \oplus \\
& k_{34}k_{36}k_{71}k_{72} \oplus k_{34}k_{36}k_{50} \oplus k_{34}k_{36}k_{48}k_{49} \oplus k_{34}k_{36}k_{46} \oplus k_{34}k_{35} \oplus \\
& k_{34}k_{35}k_{79} \oplus k_{34}k_{35}k_{78} \oplus k_{34}k_{35}k_{77} \oplus k_{34}k_{35}k_{76} \oplus k_{34}k_{35}k_{76}k_{77} \oplus \\
& k_{34}k_{35}k_{76}k_{77}k_{79} \oplus k_{34}k_{35}k_{76}k_{77}k_{78} \oplus k_{34}k_{35}k_{75}k_{76} \oplus k_{34}k_{35}k_{74}k_{75} \oplus \\
& k_{34}k_{35}k_{73} \oplus k_{34}k_{35}k_{71}k_{72} \oplus k_{34}k_{35}k_{68}k_{79} \oplus k_{34}k_{35}k_{68}k_{77}k_{78} \oplus k_{34}k_{35}k_{67} \oplus \\
& k_{34}k_{35}k_{66} \oplus k_{34}k_{35}k_{65} \oplus k_{34}k_{35}k_{64} \oplus k_{34}k_{35}k_{63} \oplus k_{34}k_{35}k_{63}k_{64} \oplus \\
& k_{34}k_{35}k_{63}k_{64}k_{66} \oplus k_{34}k_{35}k_{63}k_{64}k_{65} \oplus k_{34}k_{35}k_{61}k_{62} \oplus k_{34}k_{35}k_{60}k_{77} \oplus \\
& k_{34}k_{35}k_{60}k_{75}k_{76} \oplus k_{34}k_{35}k_{60}k_{64} \oplus k_{34}k_{35}k_{60}k_{61} \oplus k_{34}k_{35}k_{59} \oplus \\
& k_{34}k_{35}k_{59}k_{60} \oplus k_{34}k_{35}k_{54} \oplus k_{34}k_{35}k_{52}k_{78} \oplus k_{34}k_{35}k_{52}k_{76}k_{77} \oplus \\
& k_{34}k_{35}k_{52}k_{68} \oplus k_{34}k_{35}k_{51} \oplus k_{34}k_{35}k_{51}k_{79} \oplus k_{34}k_{35}k_{51}k_{77}k_{78} \oplus \\
& k_{34}k_{35}k_{51}k_{52} \oplus k_{34}k_{35}k_{50}k_{76} \oplus k_{34}k_{35}k_{50}k_{75} \oplus k_{34}k_{35}k_{50}k_{74} \oplus \\
& k_{34}k_{35}k_{50}k_{74}k_{75} \oplus k_{34}k_{35}k_{50}k_{73}k_{74} \oplus k_{34}k_{35}k_{50}k_{72}k_{73} \oplus k_{34}k_{35}k_{50}k_{61} \oplus \\
& k_{34}k_{35}k_{50}k_{60} \oplus k_{34}k_{35}k_{50}k_{59}k_{60} \oplus k_{34}k_{35}k_{50}k_{51} \oplus k_{34}k_{35}k_{49} \oplus \\
& k_{34}k_{35}k_{49}k_{50} \oplus k_{34}k_{35}k_{48}k_{50} \oplus k_{34}k_{35}k_{48}k_{49} \oplus k_{34}k_{35}k_{48}k_{49}k_{76} \oplus \\
& k_{34}k_{35}k_{48}k_{49}k_{75} \oplus k_{34}k_{35}k_{48}k_{49}k_{74} \oplus k_{34}k_{35}k_{48}k_{49}k_{74}k_{75} \oplus \\
& k_{34}k_{35}k_{48}k_{49}k_{73}k_{74} \oplus k_{34}k_{35}k_{48}k_{49}k_{72}k_{73} \oplus k_{34}k_{35}k_{48}k_{49}k_{61} \oplus \\
& k_{34}k_{35}k_{48}k_{49}k_{59}k_{60} \oplus k_{34}k_{35}k_{47}k_{50} \oplus k_{34}k_{35}k_{47}k_{48}k_{49} \oplus k_{34}k_{35}k_{46} \oplus \\
& k_{34}k_{35}k_{44} \oplus k_{34}k_{35}k_{40} \oplus k_{34}k_{35}k_{39} \oplus k_{34}k_{35}k_{39}k_{65} \oplus k_{34}k_{35}k_{39}k_{63}k_{64} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{34}k_{35}k_{38} \oplus k_{34}k_{35}k_{38}k_{66} \oplus k_{34}k_{35}k_{38}k_{64}k_{65} \oplus k_{34}k_{35}k_{38}k_{39} \oplus k_{33} \oplus \\
& k_{33}k_{75} \oplus k_{33}k_{73} \oplus k_{33}k_{73}k_{74} \oplus k_{33}k_{72} \oplus k_{33}k_{71} \oplus k_{33}k_{71}k_{73} \oplus k_{33}k_{70}k_{71} \oplus \\
& k_{33}k_{69} \oplus k_{33}k_{69}k_{72} \oplus k_{33}k_{69}k_{70} \oplus k_{33}k_{69}k_{70}k_{73} \oplus k_{33}k_{69}k_{70}k_{71} \oplus \\
& k_{33}k_{69}k_{70}k_{71}k_{72} \oplus k_{33}k_{67}k_{68} \oplus k_{33}k_{67}k_{68}k_{72} \oplus k_{33}k_{67}k_{68}k_{70}k_{71} \oplus k_{33}k_{66} \oplus \\
& k_{33}k_{65} \oplus k_{33}k_{64} \oplus k_{33}k_{64}k_{72} \oplus k_{33}k_{64}k_{71} \oplus k_{33}k_{64}k_{71}k_{73} \oplus k_{33}k_{64}k_{71}k_{72} \oplus \\
& k_{33}k_{64}k_{70}k_{71} \oplus k_{33}k_{64}k_{69} \oplus k_{33}k_{64}k_{69}k_{72} \oplus k_{33}k_{64}k_{69}k_{70} \oplus \\
& k_{33}k_{64}k_{69}k_{70}k_{73} \oplus k_{33}k_{64}k_{69}k_{70}k_{71} \oplus k_{33}k_{64}k_{69}k_{70}k_{71}k_{72} \oplus \\
& k_{33}k_{64}k_{67}k_{68} \oplus k_{33}k_{64}k_{67}k_{68}k_{72} \oplus k_{33}k_{64}k_{67}k_{68}k_{70}k_{71} \oplus k_{33}k_{64}k_{65} \oplus \\
& k_{33}k_{63}k_{64} \oplus k_{33}k_{61} \oplus k_{33}k_{61}k_{73} \oplus k_{33}k_{61}k_{71}k_{72} \oplus k_{33}k_{59} \oplus k_{33}k_{59}k_{73} \oplus \\
& k_{33}k_{59}k_{71}k_{72} \oplus k_{33}k_{59}k_{64} \oplus k_{33}k_{59}k_{64}k_{71} \oplus k_{33}k_{59}k_{64}k_{71}k_{73} \oplus \\
& k_{33}k_{59}k_{64}k_{71}k_{72} \oplus k_{33}k_{59}k_{64}k_{69}k_{70} \oplus k_{33}k_{59}k_{64}k_{69}k_{70}k_{73} \oplus \\
& k_{33}k_{59}k_{64}k_{69}k_{70}k_{71}k_{72} \oplus k_{33}k_{59}k_{60} \oplus k_{33}k_{59}k_{60}k_{73} \oplus k_{33}k_{59}k_{60}k_{71}k_{72} \oplus \\
& k_{33}k_{58}k_{73} \oplus k_{33}k_{58}k_{71}k_{72} \oplus k_{33}k_{58}k_{64} \oplus k_{33}k_{58}k_{64}k_{73} \oplus k_{33}k_{58}k_{64}k_{71}k_{72} \oplus \\
& k_{33}k_{58}k_{59}k_{64}k_{73} \oplus k_{33}k_{58}k_{59}k_{64}k_{71}k_{72} \oplus k_{33}k_{57} \oplus k_{33}k_{57}k_{73} \oplus k_{33}k_{57}k_{72} \oplus \\
& k_{33}k_{57}k_{71}k_{72} \oplus k_{33}k_{57}k_{70}k_{71} \oplus k_{33}k_{57}k_{64}k_{73} \oplus k_{33}k_{57}k_{64}k_{72} \oplus \\
& k_{33}k_{57}k_{64}k_{71}k_{72} \oplus k_{33}k_{57}k_{64}k_{70}k_{71} \oplus k_{33}k_{57}k_{59}k_{64}k_{73} \oplus \\
& k_{33}k_{57}k_{59}k_{64}k_{71}k_{72} \oplus k_{33}k_{57}k_{58} \oplus k_{33}k_{57}k_{58}k_{73} \oplus k_{33}k_{57}k_{58}k_{71}k_{72} \oplus \\
& k_{33}k_{57}k_{58}k_{64} \oplus k_{33}k_{57}k_{58}k_{64}k_{71} \oplus k_{33}k_{57}k_{58}k_{64}k_{71}k_{73} \oplus \\
& k_{33}k_{57}k_{58}k_{64}k_{71}k_{72} \oplus k_{33}k_{57}k_{58}k_{64}k_{69}k_{70} \oplus k_{33}k_{57}k_{58}k_{64}k_{69}k_{70}k_{73} \oplus \\
& k_{33}k_{57}k_{58}k_{64}k_{69}k_{70}k_{71}k_{72} \oplus k_{33}k_{56} \oplus k_{33}k_{56}k_{72} \oplus k_{33}k_{56}k_{70}k_{71} \oplus \\
& k_{33}k_{56}k_{64} \oplus k_{33}k_{56}k_{64}k_{72} \oplus k_{33}k_{56}k_{64}k_{70}k_{71} \oplus k_{33}k_{55} \oplus k_{33}k_{55}k_{72} \oplus \\
& k_{33}k_{55}k_{70}k_{71} \oplus k_{33}k_{55}k_{64} \oplus k_{33}k_{55}k_{64}k_{72} \oplus k_{33}k_{55}k_{64}k_{70}k_{71} \oplus k_{33}k_{55}k_{56} \oplus \\
& k_{33}k_{55}k_{56}k_{72} \oplus k_{33}k_{55}k_{56}k_{70}k_{71} \oplus k_{33}k_{55}k_{56}k_{64} \oplus k_{33}k_{55}k_{56}k_{64}k_{72} \oplus \\
& k_{33}k_{55}k_{56}k_{64}k_{70}k_{71} \oplus k_{33}k_{54}k_{57}k_{64} \oplus k_{33}k_{50}k_{75} \oplus k_{33}k_{50}k_{73}k_{74} \oplus k_{33}k_{48} \oplus \\
& k_{33}k_{48}k_{72} \oplus k_{33}k_{48}k_{70}k_{71} \oplus k_{33}k_{48}k_{50} \oplus k_{33}k_{48}k_{49} \oplus k_{33}k_{48}k_{49}k_{75} \oplus \\
& k_{33}k_{48}k_{49}k_{73}k_{74} \oplus k_{33}k_{47}k_{72} \oplus k_{33}k_{47}k_{70}k_{71} \oplus k_{33}k_{46} \oplus k_{33}k_{46}k_{71} \oplus \\
& k_{33}k_{46}k_{69}k_{70} \oplus k_{33}k_{46}k_{61} \oplus k_{33}k_{46}k_{59} \oplus k_{33}k_{46}k_{59}k_{64} \oplus k_{33}k_{46}k_{59}k_{64}k_{71} \oplus \\
& k_{33}k_{46}k_{59}k_{64}k_{69}k_{70} \oplus k_{33}k_{46}k_{59}k_{60} \oplus k_{33}k_{46}k_{58} \oplus k_{33}k_{46}k_{58}k_{59}k_{64} \oplus \\
& k_{33}k_{46}k_{57} \oplus k_{33}k_{46}k_{57}k_{59}k_{64} \oplus k_{33}k_{46}k_{57}k_{58} \oplus k_{33}k_{46}k_{57}k_{58}k_{64} \oplus \\
& k_{33}k_{46}k_{57}k_{58}k_{64}k_{71} \oplus k_{33}k_{46}k_{57}k_{58}k_{64}k_{69}k_{70} \oplus k_{33}k_{46}k_{47}k_{72} \oplus \\
& k_{33}k_{46}k_{47}k_{70}k_{71} \oplus k_{33}k_{45} \oplus k_{33}k_{45}k_{69} \oplus k_{33}k_{45}k_{67}k_{68} \oplus k_{33}k_{45}k_{64} \oplus \\
& k_{33}k_{45}k_{64}k_{69} \oplus k_{33}k_{45}k_{64}k_{67}k_{68} \oplus k_{33}k_{45}k_{57} \oplus k_{33}k_{45}k_{57}k_{64} \oplus k_{33}k_{45}k_{56} \oplus \\
& k_{33}k_{45}k_{56}k_{64} \oplus k_{33}k_{45}k_{55} \oplus k_{33}k_{45}k_{55}k_{64} \oplus k_{33}k_{45}k_{55}k_{56} \oplus \\
& k_{33}k_{45}k_{55}k_{56}k_{64} \oplus k_{33}k_{45}k_{48} \oplus k_{33}k_{45}k_{47} \oplus k_{33}k_{45}k_{46} \oplus k_{33}k_{45}k_{46}k_{72} \oplus \\
& k_{33}k_{45}k_{46}k_{70}k_{71} \oplus k_{33}k_{45}k_{46}k_{47} \oplus k_{33}k_{44} \oplus k_{33}k_{44}k_{73} \oplus k_{33}k_{44}k_{71}k_{72} \oplus \\
& k_{33}k_{44}k_{64} \oplus k_{33}k_{44}k_{64}k_{73} \oplus k_{33}k_{44}k_{64}k_{71}k_{72} \oplus k_{33}k_{44}k_{59}k_{64} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{33}k_{44}k_{59}k_{64}k_{73} \oplus k_{33}k_{44}k_{59}k_{64}k_{71}k_{72} \oplus k_{33}k_{44}k_{57}k_{58}k_{64} \oplus \\
& k_{33}k_{44}k_{57}k_{58}k_{64}k_{73} \oplus k_{33}k_{44}k_{57}k_{58}k_{64}k_{71}k_{72} \oplus k_{33}k_{44}k_{46} \oplus \\
& k_{33}k_{44}k_{46}k_{59}k_{64} \oplus k_{33}k_{44}k_{46}k_{57}k_{58}k_{64} \oplus k_{33}k_{44}k_{45}k_{64} \oplus \\
& k_{33}k_{44}k_{45}k_{64}k_{71} \oplus k_{33}k_{44}k_{45}k_{64}k_{69}k_{70} \oplus k_{33}k_{44}k_{45}k_{59}k_{64} \oplus \\
& k_{33}k_{44}k_{45}k_{58}k_{64} \oplus k_{33}k_{44}k_{45}k_{57}k_{64} \oplus k_{33}k_{44}k_{45}k_{57}k_{58}k_{64} \oplus k_{33}k_{42} \oplus \\
& k_{33}k_{42}k_{72} \oplus k_{33}k_{42}k_{70}k_{71} \oplus k_{33}k_{42}k_{64} \oplus k_{33}k_{42}k_{64}k_{72} \oplus k_{33}k_{42}k_{64}k_{70}k_{71} \oplus \\
& k_{33}k_{42}k_{45} \oplus k_{33}k_{42}k_{45}k_{64} \oplus k_{33}k_{39} \oplus k_{33}k_{38} \oplus k_{33}k_{34} \oplus k_{33}k_{34}k_{73} \oplus \\
& k_{33}k_{34}k_{71}k_{72} \oplus k_{33}k_{34}k_{46} \oplus k_{32}k_{75}k_{78}k_{79} \oplus k_{32}k_{73}k_{74}k_{78}k_{79} \oplus \\
& k_{32}k_{64}k_{71}k_{73} \oplus k_{32}k_{64}k_{71}k_{72} \oplus k_{32}k_{64}k_{69} \oplus k_{32}k_{64}k_{69}k_{70}k_{73} \oplus \\
& k_{32}k_{64}k_{69}k_{70}k_{71}k_{72} \oplus k_{32}k_{64}k_{67}k_{68} \oplus k_{32}k_{61}k_{64} \oplus k_{32}k_{61}k_{64}k_{69} \oplus \\
& k_{32}k_{61}k_{64}k_{67}k_{68} \oplus k_{32}k_{60} \oplus k_{32}k_{60}k_{64} \oplus k_{32}k_{60}k_{64}k_{71} \oplus k_{32}k_{60}k_{64}k_{71}k_{73} \oplus \\
& k_{32}k_{60}k_{64}k_{71}k_{72} \oplus k_{32}k_{60}k_{64}k_{69}k_{70} \oplus k_{32}k_{60}k_{64}k_{69}k_{70}k_{73} \oplus \\
& k_{32}k_{60}k_{64}k_{69}k_{70}k_{71}k_{72} \oplus k_{32}k_{59}k_{64} \oplus k_{32}k_{59}k_{64}k_{73} \oplus k_{32}k_{59}k_{64}k_{71}k_{72} \oplus \\
& k_{32}k_{59}k_{60}k_{64} \oplus k_{32}k_{59}k_{60}k_{64}k_{73} \oplus k_{32}k_{59}k_{60}k_{64}k_{71}k_{72} \oplus \\
& k_{32}k_{59}k_{60}k_{64}k_{69} \oplus k_{32}k_{59}k_{60}k_{64}k_{67}k_{68} \oplus k_{32}k_{58}k_{64} \oplus k_{32}k_{58}k_{64}k_{73} \oplus \\
& k_{32}k_{58}k_{64}k_{71}k_{72} \oplus k_{32}k_{58}k_{60}k_{64}k_{73} \oplus k_{32}k_{58}k_{60}k_{64}k_{71}k_{72} \oplus k_{32}k_{58}k_{59} \oplus \\
& k_{32}k_{58}k_{59}k_{64} \oplus k_{32}k_{58}k_{59}k_{64}k_{71} \oplus k_{32}k_{58}k_{59}k_{64}k_{71}k_{73} \oplus \\
& k_{32}k_{58}k_{59}k_{64}k_{71}k_{72} \oplus k_{32}k_{58}k_{59}k_{64}k_{69}k_{70} \oplus k_{32}k_{58}k_{59}k_{64}k_{69}k_{70}k_{73} \oplus \\
& k_{32}k_{58}k_{59}k_{64}k_{69}k_{70}k_{71}k_{72} \oplus k_{32}k_{57} \oplus k_{32}k_{57}k_{64}k_{73} \oplus k_{32}k_{57}k_{64}k_{71}k_{72} \oplus \\
& k_{32}k_{57}k_{61}k_{64} \oplus k_{32}k_{57}k_{60}k_{64}k_{73} \oplus k_{32}k_{57}k_{60}k_{64}k_{71}k_{72} \oplus \\
& k_{32}k_{57}k_{59}k_{60}k_{64} \oplus k_{32}k_{57}k_{58}k_{64} \oplus k_{32}k_{57}k_{58}k_{64}k_{73} \oplus \\
& k_{32}k_{57}k_{58}k_{64}k_{71}k_{72} \oplus k_{32}k_{57}k_{58}k_{60}k_{64}k_{73} \oplus k_{32}k_{57}k_{58}k_{60}k_{64}k_{71}k_{72} \oplus \\
& k_{32}k_{56} \oplus k_{32}k_{56}k_{64} \oplus k_{32}k_{56}k_{61}k_{64} \oplus k_{32}k_{56}k_{59}k_{60}k_{64} \oplus k_{32}k_{55}k_{64} \oplus \\
& k_{32}k_{55}k_{61}k_{64} \oplus k_{32}k_{55}k_{59}k_{60}k_{64} \oplus k_{32}k_{55}k_{56}k_{64} \oplus k_{32}k_{55}k_{56}k_{61}k_{64} \oplus \\
& k_{32}k_{55}k_{56}k_{59}k_{60}k_{64} \oplus k_{32}k_{54}k_{75} \oplus k_{32}k_{54}k_{73}k_{74} \oplus k_{32}k_{53}k_{75} \oplus \\
& k_{32}k_{53}k_{73}k_{74} \oplus k_{32}k_{49}k_{58} \oplus k_{32}k_{48}k_{78}k_{79} \oplus k_{32}k_{48}k_{72} \oplus k_{32}k_{48}k_{70}k_{71} \oplus \\
& k_{32}k_{48}k_{54} \oplus k_{32}k_{48}k_{53} \oplus k_{32}k_{47}k_{72} \oplus k_{32}k_{47}k_{70}k_{71} \oplus k_{32}k_{47}k_{48}k_{58} \oplus \\
& k_{32}k_{46}k_{64}k_{71} \oplus k_{32}k_{46}k_{64}k_{69}k_{70} \oplus k_{32}k_{46}k_{60}k_{64}k_{71} \oplus \\
& k_{32}k_{46}k_{60}k_{64}k_{69}k_{70} \oplus k_{32}k_{46}k_{59}k_{64} \oplus k_{32}k_{46}k_{59}k_{60}k_{64} \oplus k_{32}k_{46}k_{58}k_{64} \oplus \\
& k_{32}k_{46}k_{58}k_{60}k_{64} \oplus k_{32}k_{46}k_{58}k_{59}k_{64}k_{71} \oplus k_{32}k_{46}k_{58}k_{59}k_{64}k_{69}k_{70} \oplus \\
& k_{32}k_{46}k_{57}k_{64} \oplus k_{32}k_{46}k_{57}k_{60}k_{64} \oplus k_{32}k_{46}k_{57}k_{58}k_{64} \oplus \\
& k_{32}k_{46}k_{57}k_{58}k_{60}k_{64} \oplus k_{32}k_{46}k_{47}k_{72} \oplus k_{32}k_{46}k_{47}k_{70}k_{71} \oplus k_{32}k_{45}k_{48} \oplus \\
& k_{32}k_{45}k_{47} \oplus k_{32}k_{45}k_{46} \oplus k_{32}k_{45}k_{46}k_{72} \oplus k_{32}k_{45}k_{46}k_{70}k_{71} \oplus k_{32}k_{45}k_{46}k_{47} \oplus \\
& k_{32}k_{44}k_{64}k_{73} \oplus k_{32}k_{44}k_{64}k_{71}k_{72} \oplus k_{32}k_{44}k_{60}k_{64} \oplus k_{32}k_{44}k_{60}k_{64}k_{73} \oplus \\
& k_{32}k_{44}k_{60}k_{64}k_{71}k_{72} \oplus k_{32}k_{44}k_{58}k_{59}k_{64} \oplus k_{32}k_{44}k_{58}k_{59}k_{64}k_{73} \oplus \\
& k_{32}k_{44}k_{58}k_{59}k_{64}k_{71}k_{72} \oplus k_{32}k_{44}k_{46}k_{64} \oplus k_{32}k_{44}k_{46}k_{60}k_{64} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{32}k_{44}k_{46}k_{58}k_{59}k_{64} \oplus k_{32}k_{42}k_{64} \oplus k_{32}k_{42}k_{61}k_{64} \oplus k_{32}k_{42}k_{59}k_{60}k_{64} \oplus \\
& k_{32}k_{34}k_{64} \oplus k_{32}k_{34}k_{64}k_{69} \oplus k_{32}k_{34}k_{64}k_{67}k_{68} \oplus k_{32}k_{34}k_{57}k_{64} \oplus \\
& k_{32}k_{34}k_{56}k_{64} \oplus k_{32}k_{34}k_{55}k_{64} \oplus k_{32}k_{34}k_{55}k_{56}k_{64} \oplus k_{32}k_{34}k_{42}k_{64} \oplus k_{32}k_{33} \oplus \\
& k_{32}k_{33}k_{74} \oplus k_{32}k_{33}k_{72}k_{73} \oplus k_{32}k_{33}k_{64}k_{71} \oplus k_{32}k_{33}k_{64}k_{71}k_{73} \oplus \\
& k_{32}k_{33}k_{64}k_{71}k_{72} \oplus k_{32}k_{33}k_{64}k_{69}k_{70} \oplus k_{32}k_{33}k_{64}k_{69}k_{70}k_{73} \oplus \\
& k_{32}k_{33}k_{64}k_{69}k_{70}k_{71}k_{72} \oplus k_{32}k_{33}k_{59}k_{64}k_{73} \oplus k_{32}k_{33}k_{59}k_{64}k_{71}k_{72} \oplus \\
& k_{32}k_{33}k_{58}k_{64}k_{73} \oplus k_{32}k_{33}k_{58}k_{64}k_{71}k_{72} \oplus k_{32}k_{33}k_{57}k_{64}k_{73} \oplus \\
& k_{32}k_{33}k_{57}k_{64}k_{71}k_{72} \oplus k_{32}k_{33}k_{57}k_{58}k_{64}k_{73} \oplus k_{32}k_{33}k_{57}k_{58}k_{64}k_{71}k_{72} \oplus \\
& k_{32}k_{33}k_{47} \oplus k_{32}k_{33}k_{46}k_{64}k_{71} \oplus k_{32}k_{33}k_{46}k_{64}k_{69}k_{70} \oplus k_{32}k_{33}k_{46}k_{59}k_{64} \oplus \\
& k_{32}k_{33}k_{46}k_{58}k_{64} \oplus k_{32}k_{33}k_{46}k_{57}k_{64} \oplus k_{32}k_{33}k_{46}k_{57}k_{58}k_{64} \oplus \\
& k_{32}k_{33}k_{44}k_{64} \oplus k_{32}k_{33}k_{44}k_{64}k_{73} \oplus k_{32}k_{33}k_{44}k_{64}k_{71}k_{72} \oplus \\
& k_{32}k_{33}k_{44}k_{46}k_{64} \oplus k_{31}k_{79} \oplus k_{31}k_{77}k_{78} \oplus k_{31}k_{76} \oplus k_{31}k_{75} \oplus k_{31}k_{74} \oplus \\
& k_{31}k_{74}k_{78} \oplus k_{31}k_{74}k_{76}k_{77} \oplus k_{31}k_{74}k_{75} \oplus k_{31}k_{73}k_{74} \oplus k_{31}k_{72}k_{73} \oplus \\
& k_{31}k_{72}k_{73}k_{78} \oplus k_{31}k_{72}k_{73}k_{76}k_{77} \oplus k_{31}k_{64} \oplus k_{31}k_{61}k_{78} \oplus k_{31}k_{61}k_{76}k_{77} \oplus \\
& k_{31}k_{60} \oplus k_{31}k_{59}k_{60}k_{78} \oplus k_{31}k_{59}k_{60}k_{76}k_{77} \oplus k_{31}k_{55}k_{75} \oplus k_{31}k_{55}k_{74}k_{78} \oplus \\
& k_{31}k_{55}k_{74}k_{76}k_{77} \oplus k_{31}k_{55}k_{73}k_{74} \oplus k_{31}k_{55}k_{72}k_{73}k_{78} \oplus \\
& k_{31}k_{55}k_{72}k_{73}k_{76}k_{77} \oplus k_{31}k_{55}k_{61}k_{78} \oplus k_{31}k_{55}k_{61}k_{76}k_{77} \oplus \\
& k_{31}k_{55}k_{59}k_{60}k_{78} \oplus k_{31}k_{55}k_{59}k_{60}k_{76}k_{77} \oplus k_{31}k_{52} \oplus k_{31}k_{51} \oplus k_{31}k_{51}k_{74} \oplus \\
& k_{31}k_{51}k_{72}k_{73} \oplus k_{31}k_{51}k_{61} \oplus k_{31}k_{51}k_{59}k_{60} \oplus k_{31}k_{51}k_{55}k_{74} \oplus \\
& k_{31}k_{51}k_{55}k_{72}k_{73} \oplus k_{31}k_{51}k_{55}k_{61} \oplus k_{31}k_{51}k_{55}k_{59}k_{60} \oplus k_{31}k_{50} \oplus k_{31}k_{49}k_{50} \oplus \\
& k_{31}k_{48} \oplus k_{31}k_{48}k_{55} \oplus k_{31}k_{48}k_{49} \oplus k_{31}k_{47} \oplus k_{31}k_{47}k_{78} \oplus k_{31}k_{47}k_{76}k_{77} \oplus \\
& k_{31}k_{47}k_{55}k_{78} \oplus k_{31}k_{47}k_{55}k_{76}k_{77} \oplus k_{31}k_{47}k_{51} \oplus k_{31}k_{47}k_{51}k_{55} \oplus k_{31}k_{47}k_{48} \oplus \\
& k_{31}k_{36} \oplus k_{31}k_{34}k_{78} \oplus k_{31}k_{34}k_{76}k_{77} \oplus k_{31}k_{34}k_{55}k_{78} \oplus k_{31}k_{34}k_{55}k_{76}k_{77} \oplus \\
& k_{31}k_{34}k_{51} \oplus k_{31}k_{34}k_{51}k_{55} \oplus k_{31}k_{34}k_{35} \oplus k_{30} \oplus k_{30}k_{31}k_{57} \oplus k_{29}k_{73} \oplus \\
& k_{29}k_{73}k_{78}k_{79} \oplus k_{29}k_{71}k_{72} \oplus k_{29}k_{71}k_{72}k_{78}k_{79} \oplus k_{29}k_{61} \oplus k_{29}k_{59} \oplus \\
& k_{29}k_{59}k_{78}k_{79} \oplus k_{29}k_{53}k_{73} \oplus k_{29}k_{53}k_{71}k_{72} \oplus k_{29}k_{53}k_{59} \oplus k_{29}k_{46} \oplus \\
& k_{29}k_{46}k_{78}k_{79} \oplus k_{29}k_{46}k_{53} \oplus k_{29}k_{30} \oplus k_{29}k_{30}k_{76} \oplus k_{29}k_{30}k_{74}k_{78} \oplus \\
& k_{29}k_{30}k_{74}k_{76}k_{77} \oplus k_{29}k_{30}k_{74}k_{75} \oplus k_{29}k_{30}k_{72}k_{73}k_{78} \oplus \\
& k_{29}k_{30}k_{72}k_{73}k_{76}k_{77} \oplus k_{29}k_{30}k_{61}k_{78} \oplus k_{29}k_{30}k_{61}k_{76}k_{77} \oplus \\
& k_{29}k_{30}k_{59}k_{60}k_{78} \oplus k_{29}k_{30}k_{59}k_{60}k_{76}k_{77} \oplus k_{29}k_{30}k_{55}k_{74}k_{78} \oplus \\
& k_{29}k_{30}k_{55}k_{74}k_{76}k_{77} \oplus k_{29}k_{30}k_{55}k_{72}k_{73}k_{78} \oplus k_{29}k_{30}k_{55}k_{72}k_{73}k_{76}k_{77} \oplus \\
& k_{29}k_{30}k_{55}k_{61}k_{78} \oplus k_{29}k_{30}k_{55}k_{61}k_{76}k_{77} \oplus k_{29}k_{30}k_{55}k_{59}k_{60}k_{78} \oplus \\
& k_{29}k_{30}k_{55}k_{59}k_{60}k_{76}k_{77} \oplus k_{29}k_{30}k_{51}k_{74} \oplus k_{29}k_{30}k_{51}k_{72}k_{73} \oplus \\
& k_{29}k_{30}k_{51}k_{61} \oplus k_{29}k_{30}k_{51}k_{59}k_{60} \oplus k_{29}k_{30}k_{51}k_{55}k_{74} \oplus \\
& k_{29}k_{30}k_{51}k_{55}k_{72}k_{73} \oplus k_{29}k_{30}k_{51}k_{55}k_{61} \oplus k_{29}k_{30}k_{51}k_{55}k_{59}k_{60} \oplus \\
& k_{29}k_{30}k_{49} \oplus k_{29}k_{30}k_{47}k_{78} \oplus k_{29}k_{30}k_{47}k_{76}k_{77} \oplus k_{29}k_{30}k_{47}k_{55}k_{78} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{29}k_{30}k_{47}k_{55}k_{76}k_{77} \oplus k_{29}k_{30}k_{47}k_{51} \oplus k_{29}k_{30}k_{47}k_{51}k_{55} \oplus k_{29}k_{30}k_{34}k_{78} \oplus \\
& k_{29}k_{30}k_{34}k_{76}k_{77} \oplus k_{29}k_{30}k_{34}k_{55}k_{78} \oplus k_{29}k_{30}k_{34}k_{55}k_{76}k_{77} \oplus \\
& k_{29}k_{30}k_{34}k_{51} \oplus k_{29}k_{30}k_{34}k_{51}k_{55} \oplus k_{29}k_{30}k_{32} \oplus k_{29}k_{30}k_{31} \oplus k_{28}k_{60} \oplus \\
& k_{28}k_{29} \oplus k_{26}k_{62} \oplus k_{26}k_{60}k_{61} \oplus k_{26}k_{35} \oplus k_{25} \oplus k_{25}k_{79} \oplus k_{25}k_{77}k_{78} \oplus \\
& k_{25}k_{64} \oplus k_{25}k_{62} \oplus k_{25}k_{60} \oplus k_{25}k_{60}k_{61} \oplus k_{25}k_{59} \oplus k_{25}k_{55} \oplus k_{25}k_{52} \oplus \\
& k_{25}k_{50} \oplus k_{25}k_{49} \oplus k_{25}k_{48}k_{49} \oplus k_{25}k_{47}k_{48} \oplus k_{25}k_{37} \oplus k_{25}k_{36} \oplus k_{25}k_{35} \oplus \\
& k_{25}k_{35}k_{36} \oplus k_{25}k_{34}k_{35} \oplus k_{24} \oplus k_{24}k_{79} \oplus k_{24}k_{78} \oplus k_{24}k_{77} \oplus k_{24}k_{76} \oplus \\
& k_{24}k_{76}k_{77} \oplus k_{24}k_{76}k_{77}k_{79} \oplus k_{24}k_{76}k_{77}k_{78} \oplus k_{24}k_{75}k_{76} \oplus k_{24}k_{74}k_{75} \oplus \\
& k_{24}k_{73} \oplus k_{24}k_{71}k_{72} \oplus k_{24}k_{68}k_{79} \oplus k_{24}k_{68}k_{77}k_{78} \oplus k_{24}k_{67} \oplus k_{24}k_{66} \oplus \\
& k_{24}k_{65} \oplus k_{24}k_{64} \oplus k_{24}k_{63} \oplus k_{24}k_{63}k_{64} \oplus k_{24}k_{63}k_{64}k_{66} \oplus k_{24}k_{63}k_{64}k_{65} \oplus \\
& k_{24}k_{61}k_{62} \oplus k_{24}k_{60}k_{77} \oplus k_{24}k_{60}k_{75}k_{76} \oplus k_{24}k_{60}k_{64} \oplus k_{24}k_{60}k_{61} \oplus k_{24}k_{59} \oplus \\
& k_{24}k_{59}k_{60} \oplus k_{24}k_{54} \oplus k_{24}k_{52} \oplus k_{24}k_{52}k_{78} \oplus k_{24}k_{52}k_{76}k_{77} \oplus k_{24}k_{52}k_{68} \oplus \\
& k_{24}k_{51} \oplus k_{24}k_{51}k_{79} \oplus k_{24}k_{51}k_{77}k_{78} \oplus k_{24}k_{51}k_{52} \oplus k_{24}k_{50} \oplus k_{24}k_{50}k_{60} \oplus \\
& k_{24}k_{49} \oplus k_{24}k_{46} \oplus k_{24}k_{44} \oplus k_{24}k_{40} \oplus k_{24}k_{39} \oplus k_{24}k_{39}k_{65} \oplus k_{24}k_{39}k_{63}k_{64} \oplus \\
& k_{24}k_{38} \oplus k_{24}k_{38}k_{66} \oplus k_{24}k_{38}k_{64}k_{65} \oplus k_{24}k_{38}k_{39} \oplus k_{24}k_{34} \oplus k_{24}k_{31} \oplus k_{23} \oplus \\
& k_{23}k_{79} \oplus k_{23}k_{77} \oplus k_{23}k_{76} \oplus k_{23}k_{76}k_{77}k_{79} \oplus k_{23}k_{76}k_{77}k_{78} \oplus k_{23}k_{75}k_{76} \oplus \\
& k_{23}k_{73} \oplus k_{23}k_{73}k_{76} \oplus k_{23}k_{73}k_{75} \oplus k_{23}k_{73}k_{74} \oplus k_{23}k_{73}k_{74}k_{75} \oplus k_{23}k_{72}k_{73} \oplus \\
& k_{23}k_{72}k_{73}k_{75} \oplus k_{23}k_{72}k_{73}k_{74} \oplus k_{23}k_{71}k_{72} \oplus k_{23}k_{71}k_{72}k_{76} \oplus k_{23}k_{71}k_{72}k_{75} \oplus \\
& k_{23}k_{71}k_{72}k_{74} \oplus k_{23}k_{71}k_{72}k_{74}k_{75} \oplus k_{23}k_{71}k_{72}k_{73} \oplus k_{23}k_{71}k_{72}k_{73}k_{74} \oplus \\
& k_{23}k_{68}k_{79} \oplus k_{23}k_{68}k_{77}k_{78} \oplus k_{23}k_{67} \oplus k_{23}k_{66} \oplus k_{23}k_{65} \oplus k_{23}k_{64} \oplus \\
& k_{23}k_{64}k_{75} \oplus k_{23}k_{64}k_{73}k_{74} \oplus k_{23}k_{63} \oplus k_{23}k_{63}k_{64} \oplus k_{23}k_{63}k_{64}k_{66} \oplus \\
& k_{23}k_{63}k_{64}k_{65} \oplus k_{23}k_{61} \oplus k_{23}k_{61}k_{73} \oplus k_{23}k_{61}k_{71}k_{72} \oplus k_{23}k_{61}k_{62} \oplus \\
& k_{23}k_{60}k_{77} \oplus k_{23}k_{60}k_{75} \oplus k_{23}k_{60}k_{75}k_{76} \oplus k_{23}k_{60}k_{73}k_{74} \oplus k_{23}k_{60}k_{64} \oplus \\
& k_{23}k_{60}k_{61} \oplus k_{23}k_{59} \oplus k_{23}k_{59}k_{60} \oplus k_{23}k_{59}k_{60}k_{73} \oplus k_{23}k_{59}k_{60}k_{71}k_{72} \oplus \\
& k_{23}k_{58}k_{75} \oplus k_{23}k_{58}k_{73}k_{74} \oplus k_{23}k_{58}k_{59}k_{75} \oplus k_{23}k_{58}k_{59}k_{73}k_{74} \oplus k_{23}k_{54} \oplus \\
& k_{23}k_{52}k_{78} \oplus k_{23}k_{52}k_{76}k_{77} \oplus k_{23}k_{52}k_{68} \oplus k_{23}k_{51}k_{79} \oplus k_{23}k_{51}k_{77}k_{78} \oplus \\
& k_{23}k_{51}k_{52} \oplus k_{23}k_{50} \oplus k_{23}k_{50}k_{60} \oplus k_{23}k_{50}k_{51} \oplus k_{23}k_{49}k_{76} \oplus k_{23}k_{49}k_{75} \oplus \\
& k_{23}k_{49}k_{74} \oplus k_{23}k_{49}k_{74}k_{75} \oplus k_{23}k_{49}k_{73} \oplus k_{23}k_{49}k_{73}k_{74} \oplus k_{23}k_{49}k_{72}k_{73} \oplus \\
& k_{23}k_{49}k_{71}k_{72} \oplus k_{23}k_{49}k_{61} \oplus k_{23}k_{49}k_{59}k_{60} \oplus k_{23}k_{48}k_{74} \oplus k_{23}k_{48}k_{73} \oplus \\
& k_{23}k_{48}k_{72}k_{73} \oplus k_{23}k_{48}k_{71}k_{72} \oplus k_{23}k_{48}k_{64} \oplus k_{23}k_{48}k_{60} \oplus k_{23}k_{48}k_{58} \oplus \\
& k_{23}k_{48}k_{58}k_{59} \oplus k_{23}k_{48}k_{49} \oplus k_{23}k_{47}k_{75} \oplus k_{23}k_{47}k_{73} \oplus k_{23}k_{47}k_{73}k_{74} \oplus \\
& k_{23}k_{47}k_{71}k_{72} \oplus k_{23}k_{47}k_{49} \oplus k_{23}k_{47}k_{48} \oplus k_{23}k_{47}k_{48}k_{76} \oplus k_{23}k_{47}k_{48}k_{75} \oplus \\
& k_{23}k_{47}k_{48}k_{74} \oplus k_{23}k_{47}k_{48}k_{74}k_{75} \oplus k_{23}k_{47}k_{48}k_{73}k_{74} \oplus k_{23}k_{47}k_{48}k_{72}k_{73} \oplus \\
& k_{23}k_{47}k_{48}k_{61} \oplus k_{23}k_{47}k_{48}k_{59}k_{60} \oplus k_{23}k_{47}k_{48}k_{49} \oplus k_{23}k_{46} \oplus k_{23}k_{46}k_{76} \oplus \\
& k_{23}k_{46}k_{75} \oplus k_{23}k_{46}k_{74} \oplus k_{23}k_{46}k_{74}k_{75} \oplus k_{23}k_{46}k_{73}k_{74} \oplus k_{23}k_{46}k_{72}k_{73} \oplus \\
& k_{23}k_{46}k_{61} \oplus k_{23}k_{46}k_{59}k_{60} \oplus k_{23}k_{46}k_{49} \oplus k_{23}k_{46}k_{48} \oplus k_{23}k_{46}k_{47} \oplus k_{23}k_{44} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{23}k_{40} \oplus k_{23}k_{39} \oplus k_{23}k_{39}k_{65} \oplus k_{23}k_{39}k_{63}k_{64} \oplus k_{23}k_{38} \oplus k_{23}k_{38}k_{66} \oplus \\
& k_{23}k_{38}k_{64}k_{65} \oplus k_{23}k_{38}k_{39} \oplus k_{23}k_{36}k_{76} \oplus k_{23}k_{36}k_{75} \oplus k_{23}k_{36}k_{74} \oplus \\
& k_{23}k_{36}k_{74}k_{75} \oplus k_{23}k_{36}k_{73}k_{74} \oplus k_{23}k_{36}k_{72}k_{73} \oplus k_{23}k_{36}k_{61} \oplus k_{23}k_{36}k_{59}k_{60} \oplus \\
& k_{23}k_{36}k_{49} \oplus k_{23}k_{36}k_{48} \oplus k_{23}k_{36}k_{47} \oplus k_{23}k_{34} \oplus k_{23}k_{34}k_{73} \oplus k_{23}k_{34}k_{71}k_{72} \oplus \\
& k_{23}k_{34}k_{49} \oplus k_{23}k_{34}k_{47}k_{48} \oplus k_{23}k_{34}k_{46} \oplus k_{23}k_{34}k_{36} \oplus k_{23}k_{34}k_{35} \oplus \\
& k_{23}k_{34}k_{35}k_{76} \oplus k_{23}k_{34}k_{35}k_{75} \oplus k_{23}k_{34}k_{35}k_{74} \oplus k_{23}k_{34}k_{35}k_{74}k_{75} \oplus \\
& k_{23}k_{34}k_{35}k_{73}k_{74} \oplus k_{23}k_{34}k_{35}k_{72}k_{73} \oplus k_{23}k_{34}k_{35}k_{61} \oplus k_{23}k_{34}k_{35}k_{59}k_{60} \oplus \\
& k_{23}k_{34}k_{35}k_{49} \oplus k_{23}k_{34}k_{35}k_{48} \oplus k_{23}k_{34}k_{35}k_{47} \oplus k_{23}k_{33}k_{75} \oplus k_{23}k_{33}k_{73}k_{74} \oplus \\
& k_{23}k_{33}k_{48} \oplus k_{23}k_{31} \oplus k_{23}k_{25} \oplus k_{23}k_{24}k_{74} \oplus k_{23}k_{24}k_{72}k_{73} \oplus k_{23}k_{24}k_{59} \oplus \\
& k_{23}k_{24}k_{55} \oplus k_{23}k_{24}k_{47} \oplus k_{22} \oplus k_{22}k_{79} \oplus k_{22}k_{78} \oplus k_{22}k_{77} \oplus k_{22}k_{76} \oplus \\
& k_{22}k_{76}k_{77} \oplus k_{22}k_{76}k_{77}k_{79} \oplus k_{22}k_{76}k_{77}k_{78} \oplus k_{22}k_{75}k_{76} \oplus k_{22}k_{74}k_{75} \oplus \\
& k_{22}k_{73} \oplus k_{22}k_{72} \oplus k_{22}k_{72}k_{78}k_{79} \oplus k_{22}k_{72}k_{76} \oplus k_{22}k_{72}k_{75} \oplus k_{22}k_{72}k_{74}k_{75} \oplus \\
& k_{22}k_{72}k_{73}k_{74} \oplus k_{22}k_{71}k_{72} \oplus k_{22}k_{70}k_{71} \oplus k_{22}k_{70}k_{71}k_{78}k_{79} \oplus k_{22}k_{70}k_{71}k_{76} \oplus \\
& k_{22}k_{70}k_{71}k_{75} \oplus k_{22}k_{70}k_{71}k_{74}k_{75} \oplus k_{22}k_{70}k_{71}k_{73}k_{74} \oplus k_{22}k_{68}k_{79} \oplus \\
& k_{22}k_{68}k_{77}k_{78} \oplus k_{22}k_{67} \oplus k_{22}k_{66} \oplus k_{22}k_{65} \oplus k_{22}k_{64} \oplus k_{22}k_{63} \oplus k_{22}k_{63}k_{64} \oplus \\
& k_{22}k_{63}k_{64}k_{66} \oplus k_{22}k_{63}k_{64}k_{65} \oplus k_{22}k_{61}k_{62} \oplus k_{22}k_{60}k_{77} \oplus k_{22}k_{60}k_{75}k_{76} \oplus \\
& k_{22}k_{60}k_{64} \oplus k_{22}k_{60}k_{61} \oplus k_{22}k_{59} \oplus k_{22}k_{59}k_{60} \oplus k_{22}k_{58} \oplus k_{22}k_{58}k_{59} \oplus \\
& k_{22}k_{57}k_{58} \oplus k_{22}k_{55} \oplus k_{22}k_{55}k_{72}k_{75} \oplus k_{22}k_{55}k_{72}k_{73}k_{74} \oplus k_{22}k_{55}k_{70}k_{71}k_{75} \oplus \\
& k_{22}k_{55}k_{70}k_{71}k_{73}k_{74} \oplus k_{22}k_{54} \oplus k_{22}k_{53}k_{72} \oplus k_{22}k_{53}k_{70}k_{71} \oplus k_{22}k_{52}k_{78} \oplus \\
& k_{22}k_{52}k_{76}k_{77} \oplus k_{22}k_{52}k_{68} \oplus k_{22}k_{51} \oplus k_{22}k_{51}k_{79} \oplus k_{22}k_{51}k_{77}k_{78} \oplus \\
& k_{22}k_{51}k_{52} \oplus k_{22}k_{50} \oplus k_{22}k_{50}k_{76} \oplus k_{22}k_{50}k_{75} \oplus k_{22}k_{50}k_{74} \oplus k_{22}k_{50}k_{74}k_{75} \oplus \\
& k_{22}k_{50}k_{73}k_{74} \oplus k_{22}k_{50}k_{72}k_{73} \oplus k_{22}k_{50}k_{61} \oplus k_{22}k_{50}k_{60} \oplus k_{22}k_{50}k_{59}k_{60} \oplus \\
& k_{22}k_{50}k_{51} \oplus k_{22}k_{49} \oplus k_{22}k_{49}k_{72} \oplus k_{22}k_{49}k_{70}k_{71} \oplus k_{22}k_{49}k_{50} \oplus k_{22}k_{48}k_{72} \oplus \\
& k_{22}k_{48}k_{70}k_{71} \oplus k_{22}k_{48}k_{55}k_{72} \oplus k_{22}k_{48}k_{55}k_{70}k_{71} \oplus k_{22}k_{48}k_{50} \oplus \\
& k_{22}k_{48}k_{49}k_{76} \oplus k_{22}k_{48}k_{49}k_{75} \oplus k_{22}k_{48}k_{49}k_{74} \oplus k_{22}k_{48}k_{49}k_{74}k_{75} \oplus \\
& k_{22}k_{48}k_{49}k_{73}k_{74} \oplus k_{22}k_{48}k_{49}k_{72}k_{73} \oplus k_{22}k_{48}k_{49}k_{61} \oplus k_{22}k_{48}k_{49}k_{59}k_{60} \oplus \\
& k_{22}k_{47}k_{50} \oplus k_{22}k_{47}k_{48}k_{49} \oplus k_{22}k_{46} \oplus k_{22}k_{45} \oplus k_{22}k_{45}k_{78}k_{79} \oplus k_{22}k_{45}k_{76} \oplus \\
& k_{22}k_{45}k_{75} \oplus k_{22}k_{45}k_{74}k_{75} \oplus k_{22}k_{45}k_{73}k_{74} \oplus k_{22}k_{45}k_{55}k_{75} \oplus \\
& k_{22}k_{45}k_{55}k_{73}k_{74} \oplus k_{22}k_{45}k_{53} \oplus k_{22}k_{45}k_{49} \oplus k_{22}k_{45}k_{48} \oplus k_{22}k_{45}k_{48}k_{55} \oplus \\
& k_{22}k_{42}k_{43} \oplus k_{22}k_{40} \oplus k_{22}k_{39} \oplus k_{22}k_{39}k_{65} \oplus k_{22}k_{39}k_{63}k_{64} \oplus k_{22}k_{38} \oplus \\
& k_{22}k_{38}k_{66} \oplus k_{22}k_{38}k_{64}k_{65} \oplus k_{22}k_{38}k_{39} \oplus k_{22}k_{34} \oplus k_{22}k_{34}k_{50} \oplus \\
& k_{22}k_{34}k_{48}k_{49} \oplus k_{22}k_{32}k_{58} \oplus k_{22}k_{31} \oplus k_{22}k_{25} \oplus k_{22}k_{23}k_{76} \oplus k_{22}k_{23}k_{75} \oplus \\
& k_{22}k_{23}k_{74} \oplus k_{22}k_{23}k_{74}k_{75} \oplus k_{22}k_{23}k_{73}k_{74} \oplus k_{22}k_{23}k_{72}k_{73} \oplus k_{22}k_{23}k_{61} \oplus \\
& k_{22}k_{23}k_{59}k_{60} \oplus k_{22}k_{23}k_{49} \oplus k_{22}k_{23}k_{48} \oplus k_{22}k_{23}k_{47} \oplus k_{22}k_{23}k_{34} \oplus k_{21} \oplus \\
& k_{21}k_{78}k_{79} \oplus k_{21}k_{75} \oplus k_{21}k_{74} \oplus k_{21}k_{72} \oplus k_{21}k_{71} \oplus k_{21}k_{71}k_{72}k_{74} \oplus \\
& k_{21}k_{71}k_{72}k_{73} \oplus k_{21}k_{70}k_{71} \oplus k_{21}k_{69}k_{70} \oplus k_{21}k_{62} \oplus k_{21}k_{61} \oplus k_{21}k_{60}k_{72} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_{21}k_{60}k_{70}k_{71} \oplus k_{21}k_{60}k_{61} \oplus k_{21}k_{59} \oplus k_{21}k_{59}k_{72} \oplus k_{21}k_{59}k_{70}k_{71} \oplus \\
& k_{21}k_{59}k_{60} \oplus k_{21}k_{58} \oplus k_{21}k_{58}k_{59}k_{72} \oplus k_{21}k_{58}k_{59}k_{70}k_{71} \oplus k_{21}k_{57}k_{58} \oplus \\
& k_{21}k_{57}k_{58}k_{72} \oplus k_{21}k_{57}k_{58}k_{70}k_{71} \oplus k_{21}k_{55} \oplus k_{21}k_{53} \oplus k_{21}k_{48} \oplus k_{21}k_{47} \oplus \\
& k_{21}k_{47}k_{73} \oplus k_{21}k_{47}k_{71}k_{72} \oplus k_{21}k_{46}k_{74} \oplus k_{21}k_{46}k_{72}k_{73} \oplus k_{21}k_{46}k_{47} \oplus \\
& k_{21}k_{45} \oplus k_{21}k_{45}k_{60} \oplus k_{21}k_{45}k_{59} \oplus k_{21}k_{45}k_{58}k_{59} \oplus k_{21}k_{45}k_{57}k_{58} \oplus k_{21}k_{44} \oplus \\
& k_{21}k_{35} \oplus k_{21}k_{34} \oplus k_{21}k_{33}k_{72} \oplus k_{21}k_{33}k_{70}k_{71} \oplus k_{21}k_{33}k_{45} \oplus k_{21}k_{32}k_{72} \oplus \\
& k_{21}k_{32}k_{70}k_{71} \oplus k_{21}k_{32}k_{45} \oplus k_{20}k_{73} \oplus k_{20}k_{72} \oplus k_{20}k_{71}k_{72} \oplus k_{20}k_{70}k_{71} \oplus \\
& k_{20}k_{64}k_{71} \oplus k_{20}k_{64}k_{69}k_{70} \oplus k_{20}k_{60}k_{72} \oplus k_{20}k_{60}k_{70}k_{71} \oplus k_{20}k_{59}k_{72} \oplus \\
& k_{20}k_{59}k_{70}k_{71} \oplus k_{20}k_{59}k_{64} \oplus k_{20}k_{58}k_{64} \oplus k_{20}k_{58}k_{59}k_{72} \oplus k_{20}k_{58}k_{59}k_{70}k_{71} \oplus \\
& k_{20}k_{57}k_{64} \oplus k_{20}k_{57}k_{58}k_{72} \oplus k_{20}k_{57}k_{58}k_{70}k_{71} \oplus k_{20}k_{57}k_{58}k_{64} \oplus k_{20}k_{46} \oplus \\
& k_{20}k_{45} \oplus k_{20}k_{45}k_{60} \oplus k_{20}k_{45}k_{59} \oplus k_{20}k_{45}k_{58}k_{59} \oplus k_{20}k_{45}k_{57}k_{58} \oplus \\
& k_{20}k_{44}k_{64} \oplus k_{20}k_{33}k_{72} \oplus k_{20}k_{33}k_{70}k_{71} \oplus k_{20}k_{33}k_{45} \oplus k_{20}k_{32}k_{72} \oplus \\
& k_{20}k_{32}k_{70}k_{71} \oplus k_{20}k_{32}k_{45} \oplus k_{19} \oplus k_{19}k_{60}k_{64}k_{71} \oplus k_{19}k_{60}k_{64}k_{69}k_{70} \oplus \\
& k_{19}k_{59}k_{60}k_{64} \oplus k_{19}k_{58}k_{60}k_{64} \oplus k_{19}k_{58}k_{59}k_{64}k_{71} \oplus k_{19}k_{58}k_{59}k_{64}k_{69}k_{70} \oplus \\
& k_{19}k_{57}k_{60}k_{64} \oplus k_{19}k_{57}k_{58}k_{60}k_{64} \oplus k_{19}k_{44}k_{60}k_{64} \oplus k_{19}k_{44}k_{58}k_{59}k_{64} \oplus \\
& k_{19}k_{33}k_{64}k_{71} \oplus k_{19}k_{33}k_{64}k_{69}k_{70} \oplus k_{19}k_{33}k_{59}k_{64} \oplus k_{19}k_{33}k_{58}k_{64} \oplus \\
& k_{19}k_{33}k_{57}k_{64} \oplus k_{19}k_{33}k_{57}k_{58}k_{64} \oplus k_{19}k_{33}k_{44}k_{64} \oplus k_{18}k_{61} \oplus k_{18}k_{61}k_{73} \oplus \\
& k_{18}k_{61}k_{71}k_{72} \oplus k_{18}k_{60} \oplus k_{18}k_{59}k_{60} \oplus k_{18}k_{59}k_{60}k_{73} \oplus k_{18}k_{59}k_{60}k_{71}k_{72} \oplus \\
& k_{18}k_{58}k_{59} \oplus k_{18}k_{46}k_{61} \oplus k_{18}k_{46}k_{59}k_{60} \oplus k_{18}k_{34} \oplus k_{18}k_{34}k_{73} \oplus \\
& k_{18}k_{34}k_{71}k_{72} \oplus k_{18}k_{34}k_{46} \oplus k_{18}k_{33} \oplus k_{17}k_{74} \oplus k_{17}k_{73} \oplus k_{17}k_{72} \oplus \\
& k_{17}k_{72}k_{73} \oplus k_{17}k_{71} \oplus k_{17}k_{69} \oplus k_{17}k_{69}k_{70} \oplus k_{17}k_{69}k_{70}k_{72} \oplus k_{17}k_{69}k_{70}k_{71} \oplus \\
& k_{17}k_{67} \oplus k_{17}k_{67}k_{68} \oplus k_{17}k_{66} \oplus k_{17}k_{59} \oplus k_{17}k_{59}k_{72} \oplus k_{17}k_{59}k_{70}k_{71} \oplus \\
& k_{17}k_{57}k_{58} \oplus k_{17}k_{57}k_{58}k_{72} \oplus k_{17}k_{57}k_{58}k_{70}k_{71} \oplus k_{17}k_{47} \oplus k_{17}k_{46} \oplus k_{17}k_{45} \oplus \\
& k_{17}k_{45}k_{71} \oplus k_{17}k_{45}k_{69}k_{70} \oplus k_{17}k_{45}k_{59} \oplus k_{17}k_{45}k_{57}k_{58} \oplus k_{17}k_{44} \oplus \\
& k_{17}k_{44}k_{72} \oplus k_{17}k_{44}k_{70}k_{71} \oplus k_{17}k_{44}k_{45} \oplus k_{17}k_{42} \oplus k_{17}k_{25} \oplus k_{17}k_{23}k_{24} \oplus \\
& k_{17}k_{22} \oplus k_{16} \oplus k_{16}k_{74} \oplus k_{16}k_{72} \oplus k_{16}k_{72}k_{73} \oplus k_{16}k_{70}k_{71} \oplus k_{16}k_{56}k_{72} \oplus \\
& k_{16}k_{56}k_{70}k_{71} \oplus k_{16}k_{47} \oplus k_{16}k_{45} \oplus k_{16}k_{45}k_{56} \oplus k_{16}k_{17} \oplus k_{15} \oplus k_{15}k_{74} \oplus \\
& k_{15}k_{72}k_{73} \oplus k_{15}k_{64} \oplus k_{15}k_{51} \oplus k_{15}k_{49}k_{50} \oplus k_{15}k_{47} \oplus k_{15}k_{24} \oplus k_{15}k_{16} \oplus \\
& k_{15}k_{16}k_{74} \oplus k_{15}k_{16}k_{73} \oplus k_{15}k_{16}k_{72}k_{73} \oplus k_{15}k_{16}k_{71} \oplus k_{15}k_{16}k_{70}k_{71} \oplus \\
& k_{15}k_{16}k_{69}k_{70} \oplus k_{15}k_{16}k_{69}k_{70}k_{72} \oplus k_{15}k_{16}k_{69}k_{70}k_{71} \oplus k_{15}k_{16}k_{67} \oplus \\
& k_{15}k_{16}k_{66} \oplus k_{15}k_{16}k_{59} \oplus k_{15}k_{16}k_{59}k_{72} \oplus k_{15}k_{16}k_{59}k_{70}k_{71} \oplus k_{15}k_{16}k_{57}k_{58} \oplus \\
& k_{15}k_{16}k_{57}k_{58}k_{72} \oplus k_{15}k_{16}k_{57}k_{58}k_{70}k_{71} \oplus k_{15}k_{16}k_{47} \oplus k_{15}k_{16}k_{46} \oplus \\
& k_{15}k_{16}k_{45}k_{71} \oplus k_{15}k_{16}k_{45}k_{69}k_{70} \oplus k_{15}k_{16}k_{45}k_{59} \oplus k_{15}k_{16}k_{45}k_{57}k_{58} \oplus \\
& k_{15}k_{16}k_{44} \oplus k_{15}k_{16}k_{44}k_{72} \oplus k_{15}k_{16}k_{44}k_{70}k_{71} \oplus k_{15}k_{16}k_{44}k_{45} \oplus k_{15}k_{16}k_{25} \oplus \\
& k_{15}k_{16}k_{23}k_{24} \oplus k_{14}k_{74} \oplus k_{14}k_{72}k_{73} \oplus k_{14}k_{64} \oplus k_{14}k_{64}k_{73} \oplus k_{14}k_{64}k_{71}k_{72} \oplus \\
& k_{14}k_{61}k_{64} \oplus k_{14}k_{61}k_{64}k_{73} \oplus k_{14}k_{61}k_{64}k_{71}k_{72} \oplus k_{14}k_{60} \oplus k_{14}k_{60}k_{64} \oplus
\end{aligned}$$



$$\begin{aligned}
& k_{14}k_{59}k_{60}k_{64} \oplus k_{14}k_{59}k_{60}k_{64}k_{73} \oplus k_{14}k_{59}k_{60}k_{64}k_{71}k_{72} \oplus k_{14}k_{58}k_{59} \oplus \\
& k_{14}k_{58}k_{59}k_{64} \oplus k_{14}k_{56} \oplus k_{14}k_{47} \oplus k_{14}k_{46}k_{64} \oplus k_{14}k_{46}k_{61}k_{64} \oplus \\
& k_{14}k_{46}k_{59}k_{60}k_{64} \oplus k_{14}k_{34}k_{64} \oplus k_{14}k_{34}k_{64}k_{73} \oplus k_{14}k_{34}k_{64}k_{71}k_{72} \oplus \\
& k_{14}k_{34}k_{46}k_{64} \oplus k_{14}k_{33} \oplus k_{14}k_{33}k_{64} \oplus k_{13} \oplus k_{13}k_{74} \oplus k_{13}k_{72}k_{73} \oplus \\
& k_{13}k_{50}k_{73} \oplus k_{13}k_{50}k_{71}k_{72} \oplus k_{13}k_{49}k_{50} \oplus k_{13}k_{48}k_{49} \oplus k_{13}k_{48}k_{49}k_{73} \oplus \\
& k_{13}k_{48}k_{49}k_{71}k_{72} \oplus k_{13}k_{47} \oplus k_{13}k_{47}k_{48}k_{50} \oplus k_{13}k_{47}k_{48}k_{49} \oplus k_{13}k_{46}k_{50} \oplus \\
& k_{13}k_{46}k_{48}k_{49} \oplus k_{13}k_{36}k_{50} \oplus k_{13}k_{36}k_{48}k_{49} \oplus k_{13}k_{34}k_{35}k_{50} \oplus \\
& k_{13}k_{34}k_{35}k_{48}k_{49} \oplus k_{13}k_{23}k_{73} \oplus k_{13}k_{23}k_{71}k_{72} \oplus k_{13}k_{23}k_{49} \oplus k_{13}k_{23}k_{47}k_{48} \oplus \\
& k_{13}k_{23}k_{46} \oplus k_{13}k_{23}k_{36} \oplus k_{13}k_{23}k_{34}k_{35} \oplus k_{13}k_{22}k_{50} \oplus k_{13}k_{22}k_{48}k_{49} \oplus \\
& k_{13}k_{22}k_{23} \oplus k_{12} \oplus k_{12}k_{55} \oplus k_{12}k_{13} \oplus k_{12}k_{13}k_{56} \oplus k_{11}k_{62} \oplus k_{11}k_{60}k_{61} \oplus \\
& k_{11}k_{35} \oplus k_{10} \oplus k_{10}k_{52} \oplus k_{10}k_{50}k_{51} \oplus k_{10}k_{25} \oplus k_9 \oplus k_9k_{79} \oplus k_9k_{78} \oplus \\
& k_9k_{77} \oplus k_9k_{76} \oplus k_9k_{76}k_{77} \oplus k_9k_{76}k_{77}k_{79} \oplus k_9k_{76}k_{77}k_{78} \oplus k_9k_{75} \oplus \\
& k_9k_{75}k_{76} \oplus k_9k_{74}k_{75} \oplus k_9k_{73} \oplus k_9k_{73}k_{74} \oplus k_9k_{71}k_{72} \oplus k_9k_{68}k_{79} \oplus \\
& k_9k_{68}k_{77}k_{78} \oplus k_9k_{67} \oplus k_9k_{66} \oplus k_9k_{65} \oplus k_9k_{64} \oplus k_9k_{63}k_{64} \oplus k_9k_{63}k_{64}k_{66} \oplus \\
& k_9k_{63}k_{64}k_{65} \oplus k_9k_{62} \oplus k_9k_{61} \oplus k_9k_{61}k_{62} \oplus k_9k_{60} \oplus k_9k_{60}k_{77} \oplus \\
& k_9k_{60}k_{75}k_{76} \oplus k_9k_{60}k_{64} \oplus k_9k_{60}k_{61} \oplus k_9k_{59} \oplus k_9k_{59}k_{60} \oplus k_9k_{55} \oplus k_9k_{54} \oplus \\
& k_9k_{52}k_{78} \oplus k_9k_{52}k_{76}k_{77} \oplus k_9k_{52}k_{68} \oplus k_9k_{51} \oplus k_9k_{51}k_{79} \oplus k_9k_{51}k_{77}k_{78} \oplus \\
& k_9k_{51}k_{52} \oplus k_9k_{50} \oplus k_9k_{50}k_{76} \oplus k_9k_{50}k_{75} \oplus k_9k_{50}k_{74} \oplus k_9k_{50}k_{74}k_{75} \oplus \\
& k_9k_{50}k_{73}k_{74} \oplus k_9k_{50}k_{72}k_{73} \oplus k_9k_{50}k_{61} \oplus k_9k_{50}k_{60} \oplus k_9k_{50}k_{59}k_{60} \oplus \\
& k_9k_{50}k_{51} \oplus k_9k_{49} \oplus k_9k_{49}k_{50} \oplus k_9k_{48} \oplus k_9k_{48}k_{50} \oplus k_9k_{48}k_{49}k_{76} \oplus \\
& k_9k_{48}k_{49}k_{75} \oplus k_9k_{48}k_{49}k_{74} \oplus k_9k_{48}k_{49}k_{74}k_{75} \oplus k_9k_{48}k_{49}k_{73}k_{74} \oplus \\
& k_9k_{48}k_{49}k_{72}k_{73} \oplus k_9k_{48}k_{49}k_{61} \oplus k_9k_{48}k_{49}k_{59}k_{60} \oplus k_9k_{47}k_{50} \oplus \\
& k_9k_{47}k_{48}k_{49} \oplus k_9k_{46} \oplus k_9k_{44} \oplus k_9k_{40} \oplus k_9k_{39} \oplus k_9k_{39}k_{65} \oplus k_9k_{39}k_{63}k_{64} \oplus \\
& k_9k_{38} \oplus k_9k_{38}k_{66} \oplus k_9k_{38}k_{64}k_{65} \oplus k_9k_{38}k_{39} \oplus k_9k_{34} \oplus k_9k_{34}k_{50} \oplus \\
& k_9k_{34}k_{48}k_{49} \oplus k_9k_{31} \oplus k_9k_{25} \oplus k_9k_{23}k_{76} \oplus k_9k_{23}k_{75} \oplus k_9k_{23}k_{74} \oplus \\
& k_9k_{23}k_{74}k_{75} \oplus k_9k_{23}k_{73}k_{74} \oplus k_9k_{23}k_{72}k_{73} \oplus k_9k_{23}k_{61} \oplus k_9k_{23}k_{59}k_{60} \oplus \\
& k_9k_{23}k_{49} \oplus k_9k_{23}k_{48} \oplus k_9k_{23}k_{47} \oplus k_9k_{23}k_{34} \oplus k_9k_{13}k_{50} \oplus k_9k_{13}k_{48}k_{49} \oplus \\
& k_9k_{13}k_{23} \oplus k_7k_{78} \oplus k_7k_{76}k_{77} \oplus k_7k_{75} \oplus k_7k_{74} \oplus k_7k_{73}k_{74} \oplus k_7k_{72}k_{73} \oplus \\
& k_7k_{64}k_{74} \oplus k_7k_{64}k_{73} \oplus k_7k_{64}k_{70}k_{71}k_{73} \oplus k_7k_{64}k_{70}k_{71}k_{72} \oplus k_7k_{60}k_{64} \oplus \\
& k_7k_{60}k_{64}k_{72} \oplus k_7k_{60}k_{64}k_{70}k_{71} \oplus k_7k_{59}k_{64} \oplus k_7k_{58}k_{59}k_{64} \oplus \\
& k_7k_{58}k_{59}k_{64}k_{72} \oplus k_7k_{58}k_{59}k_{64}k_{70}k_{71} \oplus k_7k_{57}k_{58}k_{64} \oplus k_7k_{51} \oplus k_7k_{48} \oplus \\
& k_7k_{47} \oplus k_7k_{47}k_{64} \oplus k_7k_{46}k_{64} \oplus k_7k_{46}k_{64}k_{72} \oplus k_7k_{46}k_{64}k_{70}k_{71} \oplus \\
& k_7k_{45}k_{64}k_{73} \oplus k_7k_{45}k_{64}k_{71}k_{72} \oplus k_7k_{45}k_{60}k_{64} \oplus k_7k_{45}k_{58}k_{59}k_{64} \oplus \\
& k_7k_{45}k_{46}k_{64} \oplus k_7k_{33}k_{64} \oplus k_7k_{33}k_{64}k_{72} \oplus k_7k_{33}k_{64}k_{70}k_{71} \oplus k_7k_{33}k_{45}k_{64} \oplus \\
& k_7k_{32}k_{64} \oplus k_6 \oplus k_6k_{77} \oplus k_6k_{75}k_{76} \oplus k_6k_{61} \oplus k_6k_{59}k_{60} \oplus k_6k_{55}k_{61} \oplus \\
& k_6k_{55}k_{59}k_{60} \oplus k_6k_{50} \oplus k_6k_{34} \oplus k_6k_{34}k_{55} \oplus k_6k_{31} \oplus k_6k_{31}k_{55} \oplus k_6k_{29}k_{30} \oplus
\end{aligned}$$

$$\begin{aligned}
& k_6 k_{29} k_{30} k_{55} \oplus k_5 k_{57} \oplus k_5 k_{31} \oplus k_5 k_{29} k_{30} \oplus k_4 \oplus k_4 k_{76} \oplus k_4 k_{74} k_{78} \oplus \\
& k_4 k_{74} k_{76} k_{77} \oplus k_4 k_{74} k_{75} \oplus k_4 k_{72} k_{73} k_{78} \oplus k_4 k_{72} k_{73} k_{76} k_{77} \oplus k_4 k_{61} k_{78} \oplus \\
& k_4 k_{61} k_{76} k_{77} \oplus k_4 k_{59} k_{60} k_{78} \oplus k_4 k_{59} k_{60} k_{76} k_{77} \oplus k_4 k_{55} k_{74} k_{78} \oplus \\
& k_4 k_{55} k_{74} k_{76} k_{77} \oplus k_4 k_{55} k_{72} k_{73} k_{78} \oplus k_4 k_{55} k_{72} k_{73} k_{76} k_{77} \oplus k_4 k_{55} k_{61} k_{78} \oplus \\
& k_4 k_{55} k_{61} k_{76} k_{77} \oplus k_4 k_{55} k_{59} k_{60} k_{78} \oplus k_4 k_{55} k_{59} k_{60} k_{76} k_{77} \oplus k_4 k_{51} k_{74} \oplus \\
& k_4 k_{51} k_{72} k_{73} \oplus k_4 k_{51} k_{61} \oplus k_4 k_{51} k_{59} k_{60} \oplus k_4 k_{51} k_{55} k_{74} \oplus k_4 k_{51} k_{55} k_{72} k_{73} \oplus \\
& k_4 k_{51} k_{55} k_{61} \oplus k_4 k_{51} k_{55} k_{59} k_{60} \oplus k_4 k_{49} \oplus k_4 k_{47} k_{78} \oplus k_4 k_{47} k_{76} k_{77} \oplus \\
& k_4 k_{47} k_{55} k_{78} \oplus k_4 k_{47} k_{55} k_{76} k_{77} \oplus k_4 k_{47} k_{51} \oplus k_4 k_{47} k_{51} k_{55} \oplus k_4 k_{34} k_{78} \oplus \\
& k_4 k_{34} k_{76} k_{77} \oplus k_4 k_{34} k_{55} k_{78} \oplus k_4 k_{34} k_{55} k_{76} k_{77} \oplus k_4 k_{34} k_{51} \oplus k_4 k_{34} k_{51} k_{55} \oplus \\
& k_4 k_{32} \oplus k_4 k_{30} k_{31} \oplus k_4 k_6 \oplus k_4 k_6 k_{55} \oplus k_4 k_5 \oplus \textcolor{red}{k_3}
\end{aligned}$$