$$(n_1\ n_2\ n_3\ n_4\ n_5)\ 31$$

$$(n_1\ n_2\ n_3\ n_4)\ 15 \qquad n_5\ 16$$

$$(n_1\ n_2\ n_3)\ 7 \qquad n_4\ 8$$

$$(n_1\ n_2)\ 3 \qquad n_3\ 4$$

$$n_1\ 1 \qquad n_2\ 2$$

The number of bits required to encode the most frequent symbol and least frequent symbol are 1 and $n-1$ respectively.