⑥

(Using that in the second term we have $a=4$, and the powers of R, W B inside the brackets are 2, so $b' = \frac{b}{2} = \frac{4}{2} = 2$ $c' = d' = \frac{c}{2} = \frac{d}{2} = \frac{2}{2} = 1$) ✓ 1/1

Similarly
$N(R^2W^4B^2) = N(R^2W^2B^4)$
$= \frac{8!}{4!2!2!} + \frac{5 \cdot 4!}{2!1!1!} = 420 + 60 = 480$ ✓

$\therefore N = \frac{1}{8}(N(R^4W^2B^2) + N(R^2W^4B^2) + N(R^2W^2B^4))$ ✓ 4/4

$= \frac{1}{8}(480 + 480 + 480) = 180$ (I also checked this via the long route)

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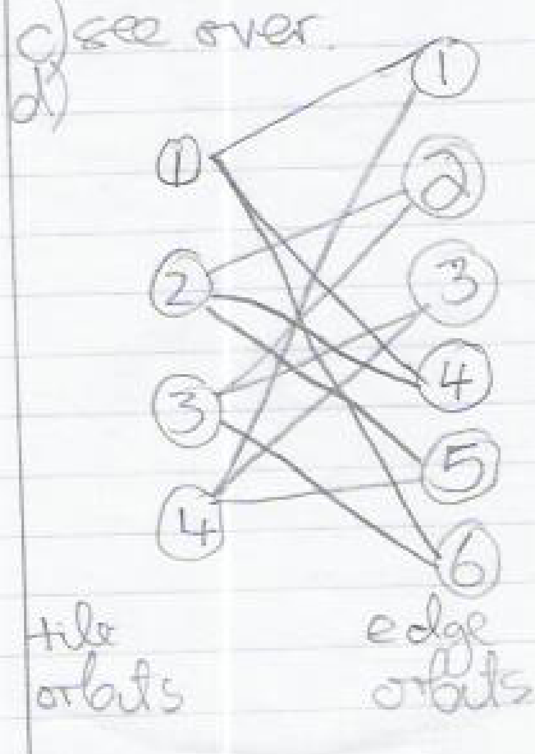
4) a) By inspection $\mathcal{T}$ has four translational tile orbits. ✓ 1/1

b) $n_e(\mathcal{T}) = \frac{1}{2}(3n_3 + 4n_4 + \ldots + kn_k + \ldots)$
$\mathcal{T}$ has only tiles of degree three, and there are four translational orbits of tiles of degree 3
$\therefore n_e(\mathcal{T}) = \frac{1}{2}(3 \cdot 4 + 0 + 0 \ldots 0)$ ✓
$= \frac{1}{2} \times 12 = 6$ ✓ 2/2

c) see over.

d)



✓ 4/4