1) Grid = 3 × 7 = 21 Position
Wall in 5 grid position
Available space = 21 − 5 = 16 grids

2 Roombas ∴ One can be in 16 POS
Second in 15 Positions

At most 3 position one dirty

$$16 \times 15 \times \sum_{d=0}^{3} {}^{16}C_d \left($$

2) Same as above, but 1 Roomba
1 walls hence No of Position available: 17
3 charging slots, power level 0 & 2
dirtynes = 1 → 3 & 3 position one dirty
Charging
∴ 17 × 3 (Possible states for Roomba)
1 Consider dirty positions

$$\text{No of States } 17 \times 3 \times \sum_{d=0}^{3} {}^{17}C_d$$

3) Power level b/w 0 & 1, 1 charging Slot
Even Roomba can't move at power level 0.
∴ Starting at Charging Slot, Roomba can only move in 3 direction after which its battery level becomes 0 & cannot move further.
∴ No of States = 3