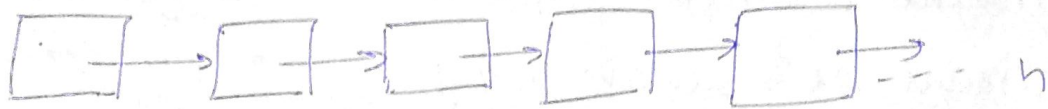


Q1)

a)

$$I_n - \text{out} + \text{gen} = A_{ce}$$

{ general (mass balance equation)
& energy }

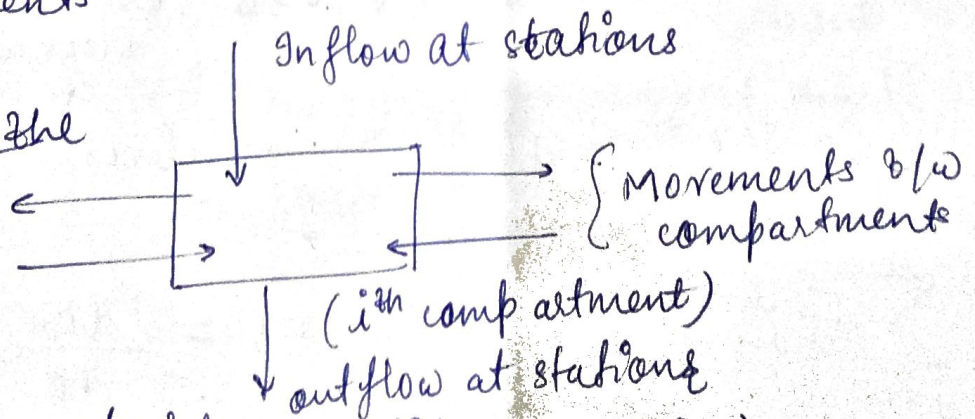


{ for a train with no of 'n' compartments
{our system}

we can take a single compartment & treat it
as our subsystem

- we treat (our trains) as connected compartment where people are equally likely to move or board the train.
- We assume there is no "ticket wise" differentiation b/w compartments.
- This brings uniformity of movement in train compartments

Take A single compartment as the subsystem



Let $F(i, i+1)$ denote inflow to (i) from (i+1)