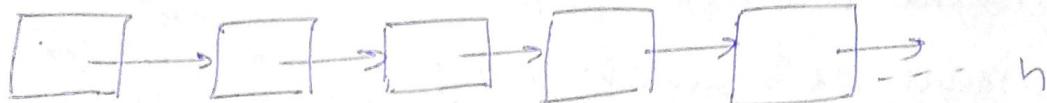


Q1)

a)

$$In - out + gen = Ace$$

{ general mass balance equation
& energy}

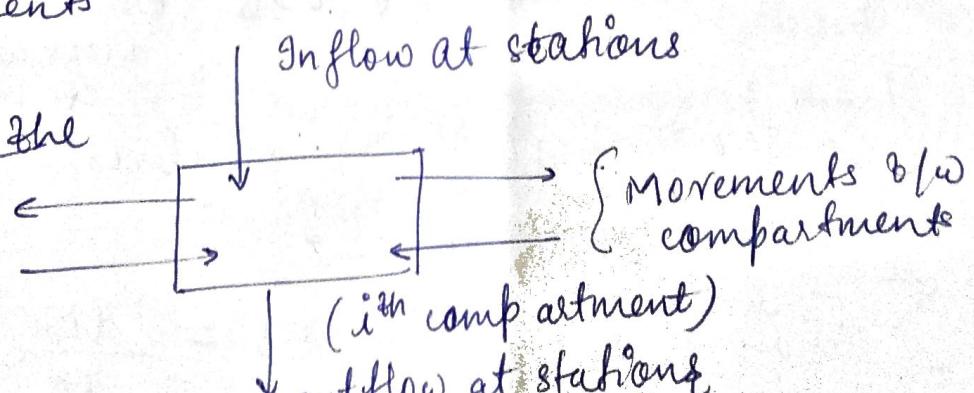


{ for a train with nof 'n' compartments }
our system

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 $(i+1)$