Step -1: We have Given, A+B=Product

We know that Rate of the Reaction $R=K[A]^x[B]^y$ ... Equ^n (1)

Where : K Is Rate costant,x is order of Reactant A,y is order of Reactant B.

Step -2: Put The Given experiment data in Equation 1 One By One

We Get,

$2=K[2]^x[2]^y$ .....(Fromm Exp 1 Data) equ^n (2)

$8=K[4]^x[2]^y$ .....(Fromm Exp 2 Data) equ^n (3)

$8=K[4]^x[4]^y$ .....(Fromm Exp 3 Data) equ^n (4)

Now By Solving Above equ^n

equ^n (3)/ equ^n (2),We get

$4=2^x$ => x=2 Hence Order of A is 2

equ^n (4)/ equ^n (3),We get

$1=2^y$ => y=0 Hence Order of B is 0

Now put value of x and y in equ (2) We get,

k=1/2

Step 4:Now Finally Put x,y,k in Equation (1) We Get,

$R=1/2(2)^2(2)^0=2$

Final Answer:

Ans (A): Order of A is 2

Ans (B): Order of B is 0

Ans (C): K=1/2 $(mol/sec)^{-2}$

Ans (D): Rate Costant=2