Ans 1 $$n(L) = \frac{d(N/V)}{dL}$$

$$n_0(L) = \lim_{L \to 0} \frac{d(N/V)}{dL}$$

Now

$\Rightarrow$ no of crystals with size L in $= 0$

no of crystals with size L out $= F \Delta t\, n(L) \Delta L$

+ no of crystals grown to size $L = n(L) V \Delta L$

- no of crystals grown to size $L+\Delta L = n(L+\Delta L) V \Delta L$

$$\Rightarrow F\, n(L) \Delta L = n(L) V \frac{\Delta L}{\Delta t} - n(L+\Delta L) V \frac{\Delta L}{\Delta t}$$

$$\Rightarrow F n(L) \Delta L = n(L) V G - n(L+\Delta L) V G$$

Ans 2 Converting to the differential equation

$$\lim_{\Delta L \to 0} \frac{n(L)| - n(L+\Delta L)|}{\Delta L} = \frac{F}{VG} n|L|$$

$$\Rightarrow -\frac{dn|L)}{dL} = \frac{F}{VG} n|L|$$

$$\Rightarrow \frac{dn|L|}{dL} = \frac{-F}{VG} n|L| = \frac{-n|L|}{G\tau}$$

$$\Rightarrow \int_{n_0|L)}^{n|L|} \frac{dn|L|}{dL} = -\int_0^L \frac{1}{G\tau} dL$$

$$\Rightarrow \ln\left(\frac{n(L)}{n_0(L)}\right| = \frac{-L}{G\tau}$$

$$\Rightarrow n(L) = n_0|L| e^{(-L/G\tau)}$$

we know $n_0(L) = \frac{B_0}{G}$

$$\Rightarrow n|L| = \frac{B_0}{G} \exp\left(\frac{-L}{G\tau}\right)$$