과제 1) 4.32 를 유도하시오.

$$\frac{E_F - E_C}{kT} = \left(\frac{3\sqrt{\pi}}{4}\frac{n}{N_c}\right)^{2/3} . \qquad (4.32)$$

과제 2) 4.33 과 4.39를 유도하시오.

$$J|_{\text{overflow}} = \left(\frac{4N_c}{3\sqrt{\pi}}\right)^2 \left(\frac{\Delta E_C}{kT}\right)^3 eBW_{DH} . \qquad (4.33)$$

$$J|_{\text{overflow}} = \left[\frac{m^*}{\pi\hbar^2}(\Delta E_C - E_0)\right]^2 \frac{eB}{W_{QW}} . \qquad (4.39)$$