

For a free electron gas with number density  $n$  write (1) the Fermi wavenumber  $k_F$  and (2) the Fermi energy of the gas  $E_F$ . Also write (3) the density of states  $\rho(E) = ?$ , (4) the total number of electrons in the solid, (5)  $\rho(E_F) = ?$ , and (6) the number of conduction electrons (the number of electrons with energy  $E_F$ )  $N_C = ?$ .