

Outline the assumptions of the Debye model for the heat capacity of a solid, and use the Debye model to determine the limiting form for the heat capacity at low and high temperatures.

$T$ (K)	0.1	1.0	5	8	10	15	20
$C$ ( $\text{J K}^{-1}\text{mol}^{-1}$ )	$8.5 \times 10^{-7}$	$8.6 \times 10^{-4}$	$1.2 \times 10^{-1}$	$5.9 \times 10^{-1}$	1.1	2.8	6.3

The table gives the heat capacity  $C$  for KCl as a function of temperature. Discuss the data with reference to the Debye theory, and make an estimate of the Debye temperature.