

## Structure of matter: Series 7

Due on December 14<sup>th</sup> 2017 after the lecture

Please indicate your name and the name of your seminar group leader on the solution sheets!

Solve the following integrals:

a)  $\int_0^{\infty} x^n e^{-px} dx = ??$  ( $n$  – integer;  $p > 0$ )

b)  $\frac{2}{L} \int_0^L x \sin\left(\frac{n\pi x}{L}\right) \sin\left(\frac{m\pi x}{L}\right) dx = ??$ ;  $n \neq m$       $n, m$  integer

Discriminate between  $(n-m)$  – odd and  $(n-m)$  – even and interpret the result!

Remark: Please solve the integrals autonomously. Copying will not be helpful in preparing for the examination!