

Assignment 4 (10 marks)

True or false:

- 1) The reciprocal of reciprocal space is Real space
- 2) The vector dot product of the reciprocal lattice vectors and the corresponding real lattice vectors is $(2n+1)\pi$
- 3) In approximating a periodic function, the Fourier series of the function becomes more accurate as you increase the number of terms
- 4) A δ function has a non-zero value at all values of x
- 5) Allowed energy values of nearly free electrons vary continuously across Brillouin zone boundaries
- 6) Reciprocal space is Fourier Transform of Real space
- 7) A δ function can only be placed at the origin
- 8) Reciprocal lattice corresponding to a real 1D lattice can be represented as a Dirac comb
- 9) A real 1D lattice can be represented as a Dirac comb
- 10) The Poisson's summation formula relates Fourier coefficients of a function to its Fourier Transform