

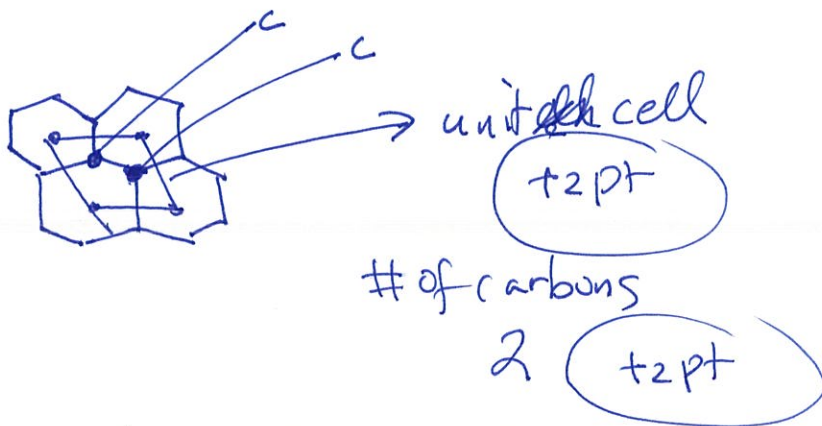
MSE 2001B Quiz #3, 9-4-2015

Your name (print) _____ Your major _____ Score _____/10

Please **ONLY** use the space of each question to provide your answer. You will have **10 minutes** to work on this quiz. Please sign to confirm that all work on this test is yours and yours only.

Signature KEY Grader: Hunter

1. Draw the **unit cell of graphene**. How many **carbon atoms** are there in the unit cell of graphene? (4 pts)



2. Given that the ionic radii of Na ion (Na^+) and chloride ion (Cl^-) are 0.116 nm and 0.181 nm, respectively.

- 2.1) What is the **crystal structure** of NaCl? (2 pts)

FCC or ~~cubic~~ cubic close-packed structure ccp

- 2.2) What is the **coordination number** of Na^+ and Cl^- ions, respectively? How many **cations** and **anions** are contained in the unit cell? (2 pts)

0.5pt $\leftarrow \text{Na}^+ \text{CN: } 6$ # of Na^+ : 4 → 0.5pt
 0.5pt $\leftarrow \text{Cl}^- \text{CN: } 6$ # of Cl^- : 4 - 0.5pt

- 2.3) How many **vacant** tetrahedral and octahedral holes are available in one unit cell of NaCl? (2 pts)

= ↓ ↓
 8 0
 +1pt +1pt