Quiz 2

Due Oct 21 at 11:59p.m. **Points** 3.3 **Questions** 10
Available Oct 21 at 12a.m. - Oct 21 at 11:59p.m. 23 hours and 59 minutes
Time Limit 30 Minutes

This quiz was locked Oct 21 at 11:59p.m..

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	10 minutes	2.97 out of 3.3

Score for this quiz: **2.97** out of 3.3
Submitted Oct 21 at 10:14p.m.
This attempt took 10 minutes.

Question 1

0.33 / 0.33 pts

Which of the following is the best explanation for a reason that a few atoms in a solid at a room temperature may have enough kinetic energy to break free of their nearest neighbour atoms, while the majority are held in place by bonds?

- Crystalline imperfections mean that there will randomly be too many bonds
- Correct! There is a distribution of energies for a population of atoms
- This occurs only to impurity atoms much larger than a host lattice
- These result due to heat treatments a material could have undergone

Question 2

0.33 / 0.33 pts

Which of the following is the best description of the basis for metallic strengthening mechanisms?

- Crystalline imperfections are removed thereby inhibiting the movement of linear crystalline imperfections
- Crystalline imperfections are removed thereby increasing the movement of linear crystalline imperfections

Correct!

- (selected) Crystalline imperfections are introduced that inhibit the movement of linear crystalline imperfections
- The overall density of linear crystalline imperfections is reduced thereby inhibiting the movement of other linear crystalline imperfections

Question 3

0.33 / 0.33 pts

A hypothetical ceramic has the sodium chloride crystal structure. The anion and cation radii are 0.186 nm and 0.077 nm respectively. The anion and cation molar masses are 29.02 g/mol and 40.27 g/mol respectively. Which of the following is the theoretical density of this ceramic?

- 6.33 g/cm^3
- 0.79 g/cm^3

Correct!

- 3.16 g/cm^3
- 1.58 g/cm^3

Question 4

0.33 / 0.33 pts

Indicate the crystal structure with a coordination number of 12 and a total of 2 atoms per unit cell

- Body centered cubic (BCC)
- Face centered cubic (FCC)
- Hexagonal close packed (HCP)

Correct!

- None of the above

Question 5

0.33 / 0.33 pts

What is the best description of an octahedral site?

- A space where 6 atoms are missing

Correct!

- A small space surrounded by 6 atoms
- A small space surrounded by 4 atoms
- A space where 4 atoms are missing

Question 6

0.33 / 0.33 pts

Indicate the number of atoms per cell, coordination number, and atomic packing factor for the body centered cubic (BCC) crystal structure

- 4, 8, 0.74
- 2, 8, 0.74
- Correct! 2, 8, 0.68
- 4, 8, 0.68

Question 7

0.33 / 0.33 pts

What type of deformation best represents what is occurring between the proportional limit and the point of 0.2% offset yield strength?

- Linear elastic deformation
- Uniform plastic deformation
- Correct! Non-linear elastic deformation
- Non-uniform plastic deformation

Question 8

0 / 0.33 pts

A sample is loaded in tension beyond the point of elastic deformation. If the sample is unloaded, what type(s) of strain are present in the sample?

orrect Answer

ou Answered

- Plastic strain
- Plastic and elastic strain
- Elastic strain
- Uniform strain

Question 9

0.33 / 0.33 pts

Which of the following statements is false?

Correct!

- The 0.2% offset yield strength is defined as the amount of strain that will result in a yield strength of 0.2%
- 0.2% offset yield strength is used because for ductile materials it is difficult to find out the point at which the behaviour switches from elastic to plastic
- The 0.2% offset yield strength is always above the proportional limit
- 0.2% offset yield strength is determined by finding the intersection of the stress-strain curve with a line parallel to the initial slope of the curve and which intercepts the x-axis at 0.2%

Question 10

0.33 / 0.33 pts

An element has an atomic radius of 0.128 nm, a molar mass of 61.59 g/mol, and forms a FCC crystal structure. What is the density of this

element, rounded to the nearest two decimal places in g/cm^3?

Correct!

8.62

orrect Answers

8.62 (with margin: 0.2)

Quiz Score: **2.97** out of 3.3