Assignment 2

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-02-13, 23:59 IST.

1) All body diagonals of a conventional unit cell of a tetragonal crystal with $c/a$ ratio=2 is given by:

- [111]
- <111>
- <112>
- (111)

No, the answer is incorrect.
Score: 0
Accepted Answers:
<111>

2) All the members of the symmetry related family of planes {100} in an orthorhombic lattice are given by:

- (100), (1̅00), (010), (001), (001)
- [100], [100]
- (100), (1̅00), (010), (001)
- (100), (010), (001)

No, the answer is incorrect.
Score: 0
Accepted Answers:
[100], [100]

3) The plane containing the directions [001] and [110] is

1 point
Score: 0

Accepted Answers:

(110)

4) The line of intersection of the planes (111) and (110) is

- [11\(\bar{2}\)]
- [201]
- [110]
- [111]

No, the answer is incorrect.

Score: 0

Accepted Answers:

[11\(\bar{2}\)]

5) In Bragg's equation \(\lambda = 2d \sin \theta\), the angle \(\theta\) is the angle between

- plane normal and the incident beam
- transmitted and diffracted beam
- half the angle between transmitted and diffracted beam
- none of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

half the angle between transmitted and diffracted beam

6) The close packed planes in a ccp crystal are given by {111}. If the stacking sequence is ABCABCABC... and the A layer is (111), the B layer will be:

- (111)
- (11\(\bar{1}\))
- (100)
- Both a and b

No, the answer is incorrect.

Score: 0

Accepted Answers:

(111)

7) Which of the following stacking sequences will give rise to close packed structures?

P: ABCABCABC...
Q: ABABABAB...
R: AABAAABB...
S: ABCBCABCBC...

- P and Q only
- P, Q and R
- P, Q and S
- P and R only

No, the answer is incorrect.

Score: 0

Accepted Answers:
P, Q and S

8) The lattice parameter \( c \) and \( a \) of an HCP crystal are related to the dimensions of the tetrahedral voids in the structure. Choose the correct statement:

- \( c \) is the height of the tetrahedron and \( a \) is the edge length of the tetrahedron
- \( c \) is the edge length of the tetrahedron and \( a \) is the height of the tetrahedron
- \( c \) is two times the edge length of the tetrahedron and \( a \) is the height of the tetrahedron
- \( c \) is two times the height of the tetrahedron and \( a \) is the edge length of the tetrahedron

No, the answer is incorrect.
Score: 0
Accepted Answers:
- \( c \) is two times the height of the tetrahedron and \( a \) is the edge length of the tetrahedron

9) Packing fraction is defined as the volume occupied by the atoms in a unit cell divided by the volume of the unit cell. Let \( c \) be the packing fraction of ccp and \( h \) be the packing fraction of hcp. Choose the correct option:

- \( c = h \)
- \( c = 0.74h \)
- \( c < h \)
- \( c = 0.414h \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
- \( c = h \)

10) The plane normal to the close packed plane in a hcp crystal is along the __________ of the crystal

- two-fold axis
- three-fold axis
- six-fold axis
- four-fold axis

No, the answer is incorrect.
Score: 0
Accepted Answers:
- six-fold axis